

THE IRON AGE

THURSDAY, JULY 12, 1888.

Electric Welding Machines.

In our issue of March 1, 1888, we referred briefly to the process of electric welding as carried out at the works of the Thomson Electric Welding Company, at Lynn, Mass. In view of the interest attached to the subject we need not specially commend to the attention of our readers the engravings on this page, illustrating two types of machines by means of which their welding is accomplished.

The principle involved in this new art is that of causing currents of electricity to pass through the abutting ends of the pieces of metal which are to be welded, thereby generating heat at the point of contact, which also becomes the point of greatest resistance, while at the same time mechanical pressure is applied to force the parts together. As the currents heat the metal, at their junction, to the welding temperature, the pressure follows up the softening surface until a complete union or weld is effected, and, as the heat is first developed in the interior of the parts to be welded, the interior of the joint is, it is claimed, as efficiently united as the visible exterior. With such a method and apparatus, it is found possible to accomplish not only the common kinds of welding of iron and steel, but of metals which have heretofore resisted attempts at welding, and have had to be brazed or soldered. Pieces of such metals and alloys as wrought iron, silver, copper, brass, lead, tin, zinc, bronze, German silver, platinum, gold and even cast iron, are not only welded to each other, but different metals can be welded one to another in many combinations, extending the applications of the process to the attainment of results heretofore impossible in metal working, while the tensile strength of the welds, as shown by mechanical tests under the direction of the U. S. Ordnance Department, are all that can be desired.

The machines built by the Thomson Electric Welding Company are generators of electricity, so constructed as to produce

the low pressure currents needed in welding and similar work. They are of sizes and types suited to the kind and scale of work, as well as to the nature and location of the power by which they are to be driven. They are built to take power

of work, from the smallest wire to bars of over 3 inches in diameter. For heavier work, such as large forgings of locomotive frames, car axles, shaftings, &c., special forms of machines adapted to the purpose can be supplied by the company,

while by the use of specially adapted holders, applied to the standard forms of machines, various shapes and irregular sizes of metal pieces may be welded without difficulty. The power required for the different sizes varies nearly as the cross sectional area of the material at the joint where the weld is to be made. The welding or working is claimed to be much more economical and far superior to that produced by the ordinary methods, while the currents used are of such low pressure as to render any danger of shocks impossible.

Fig. 1 represents an indirect welding machine as now built for moderately heavy work, such as metal bars of about 2 inches in diameter. This machine takes a current from a dynamo by means of wires and may be placed in any convenient location, more or less distant from the source of power. Fig. 2 represents a type of the direct welding machine, combining both the dynamo and welding apparatus. This can be run by belting directly to the engine or to line shafting. This machine is used for all kinds of light work, its capacity ranging from fine wire to rods of 2½ inches in diameter. The welds, it will be understood, are butt welds and the rods to be united are securely clamped in two arms. This the engravings show clearly.

We need not specially emphasize the fact that the variety of uses to which the process of electric welding may be applied is almost endless. Thus it is adapted to the join-

ing of wires of copper, iron or other metals, or bars of similar or different shapes and sections; making joints at angles with bars, as T or Y joints; making chains of links with double welds, both joints being formed by one operation and ranging from cable work to jewelers' chains, combining the same or different

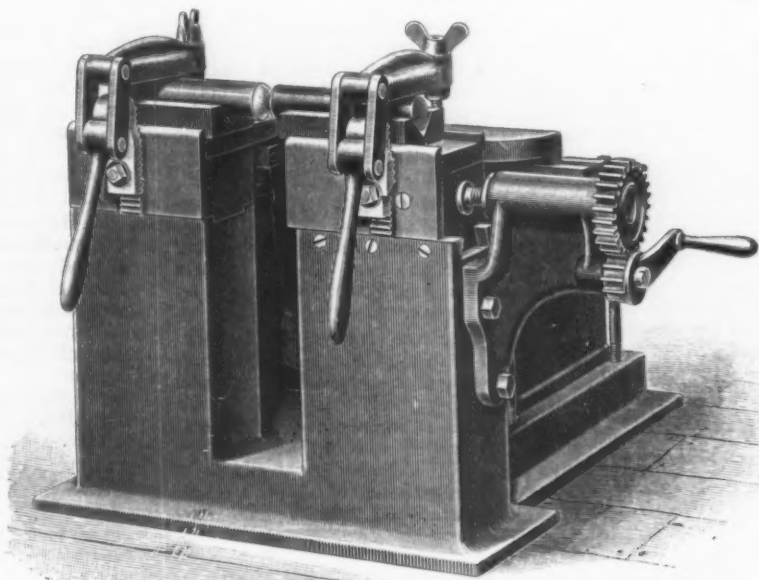


Fig. 1.—Indirect Welding Machine.

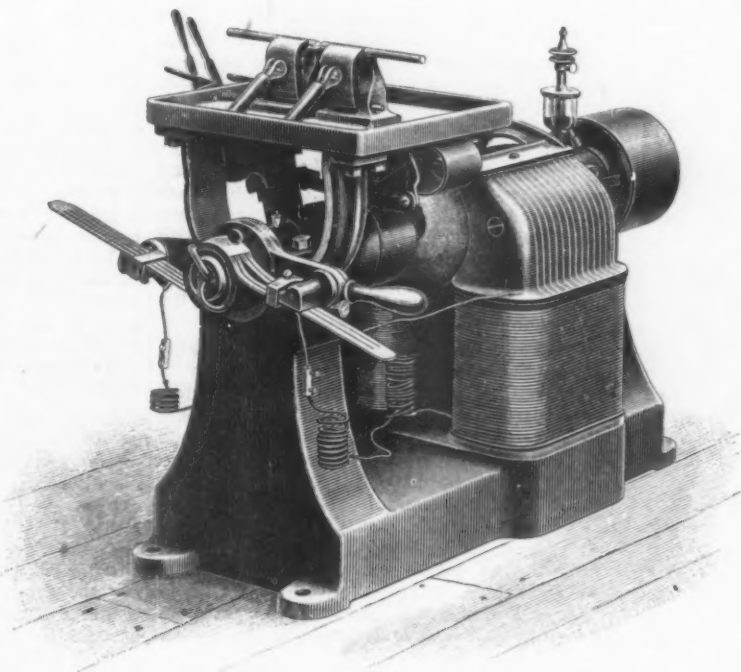


Fig. 2.—Direct Welding Machine.

ELECTRIC WELDING MACHINES, BUILT BY THE THOMSON ELECTRIC WELDING CO., LYNN, MASS.

from any source; to operate wherever placed, by producing directly from such power the necessary currents, or to be supplied by currents taken from a circuit, fed by suitable dynamos at a greater or less distance from the welding apparatus itself. The machines now being manufactured are so graded as to apply to various kinds

metals; constructing or joining, end to end, pipe of all kinds and of large diameters; the working, joining, &c., of lead pipe and the welding in of T connections or elbows into lines of pipe, &c. The operator has absolute control over the heat as, by the simple movement of a lever, the metal can be held at any temperature desired. The welding process, moreover, can be continually watched, as the metal while heating is visible, instead of being covered with coal or hidden by flame, as in the ordinary process. The union further commences at the interior of the joint and not in an uncertain way, as in the ordinary lap welding, and consequently any flaw in the process, it is claimed, can be easily discovered and prevented. The process is almost instantaneous with small diameters, while with larger sizes it requires but a few seconds, depending upon the horse-power used. The external part of the welding circuit is so contrived as to be practically a pair of clamps into which the pieces to be welded may be fastened close to the ends to be joined, so that when these ends are in contact an electric ring circuit is completed, consisting of the part included within the primary coils, the clamps and the metals to be welded. The energy spent in this circuit is easily regulated, and is thus adapted to the demands of the work to be done, whether it be with thick or thin bars or wires. None of the energy is wasted, and there is no expenditure at all when the welding is not in progress.

The Ohio Valley Centennial Exhibition.

The Centennial Exhibition of the Ohio Valley and Central States, active preparations for which have been going on for 12 months past at Cincinnati, Ohio, was opened on Wednesday, July 4, 1888.

The machinery department has an exceptionally fine collection of iron and wood working tools, and is considered fully equal to, if not greater than, that of the Centennial Exposition at Philadelphia in 1876. The G. A. Gray Machinery Company, Cincinnati, exhibit at the main entrance to Machinery Hall, a 10-foot bed planer, 36 inches by 36 inches, with double heads, power quick elevating device, quick return and short run, weight, 13,000 pounds; one single head 5-foot bed, 26 inches by 26 inches, with power elevating device, and one 5-foot bed, 23 inches by 23 inches ditto. All of these machines have a new device for shifting the belts. The machines are highly finished, and especially designed for great durability. This company also exhibit one screw cutting lathe with 26-inch swing, 13-foot bed, compound rest, independent rod feed, weight, 8000 pounds; also one 20-inch swing and one 17-inch, both with 8-foot beds, having compound rests and taper attachments.

The Long & Allstater Company, Hamilton, Ohio, have two exhibits, one embracing a 6-inch angle iron shear, cutting from $\frac{1}{4}$ inch to $\frac{3}{4}$ inch thick; one 3 inches thick; one large plate shear, cutting any size or width of plate; one plate shear and multiple punch combined, shearing up to 50 inches in width by $\frac{3}{4}$ inch thick; one 36-inch deep throat boiler punch, No. 2 size, with capacity for punching through $\frac{3}{4}$ -inch iron; one double No. 3 punch and shear combined; one No. 3 horizontal punch; and one tire welding machine for welding wagon and buggy tires. This machine is one of their latest productions. The welding dies are adjustable by means of cams, the female die remaining stationary, while the male and edging dies are

adjustable to $\frac{1}{2}$ inch, the machine welding tires from $\frac{1}{4}$ inch to $1\frac{1}{2}$ inches wide. Two sizes of this machine are made, each being provided beneath the edging die with a shear attachment for cutting the tire material to the lengths desired. This firm further exhibits a powerful bending and forming machine, also adapted to straightening heavy bars, beams, &c., and for shaping iron suitable to all purposes. Another portion of the hall is occupied by this firm, with a space in which is exhibited every variety of agricultural implements, consisting of rakes, cultivators, plows, feed cutters, &c.

Ritchie & Deyer, Hamilton, Ohio, exhibit a model Parry saw-mill outfit and a 10 horse-power Ritchie traction engine. This has steel gearing and a steel boiler and is well put together. The firm claim to have built the first engine of this type ever used in the United States.

Cordesman, Meyer & Co., Cincinnati, Ohio, manufacturers of wood-working machinery, exhibit some of their latest and best productions, consisting of tilting saw tables, band saws, jointers, planers and mortisers, the whole making a very creditable display.

The Falls Rivet Company, Cuyahoga Falls, Ohio, exhibit their several specialties, consisting of their patent clutch and cut-off couplings, steel-rim pulleys, split pulleys, pedestal stands and boxes and Akron cold-rolled shafting. This firm have supplied the electric light plants at the exposition with shafting and couplings. The clutches are made from 1 to 1000 horse-power, with two, four and six arms.

The National Steel Wire Mat Company, with factories at Cincinnati, Chicago and Beaver Falls, Pa., have an interesting exhibit in the southern end of the hall, consisting of a complete manufacturing plant in operation producing specimens of their goods, the wall space of the exhibit being appropriately decorated with wire mats of the various sizes made. The machinery employed in the manufacture of these goods proves a great attraction to visitors.

The Van Duzen Gas Engine Company, of Cincinnati, have two displays of their gas engines, one immediately adjoining the main entrance to the machinery hall, and the second in the south end. The exhibit consists of 2, 4 and 7 horse-power engines of a new type. They are provided with automatic lubricator similar to the Westinghouse engine, which latter they closely resemble in form, and are claimed to be economical in consumption of gas.

The Iowa Farming Tool Company, Fort Madison, Iowa, have a unique display in pyramidal form, some 20 feet high, 8 feet square at base, and 3 feet 6 inches at apex, consisting of a dark background upon which are secured specimens of the various tools and implements produced by them. A smaller pyramid is used for the display of grain cradles, snaths, ox yokes, &c.

Mast, Foos & Co., Springfield, Ohio, make an elaborate display of iron fencing of various designs, the well-known Buckeye Force Pumps, lawn mowers and their Iron Turbine wind engines, hose reels lawn sprinklers, &c.

The Eagle Machine Company, Lancaster, exhibit well-gotten-up specimens of their hand and power cornshellers, fodder cutters, straw cutters, stackers, screen doors, corn planters, animal pokes, horse-powers, &c.

The Kilbourne & Jacobs Mfg. Company, Columbus, Ohio, exhibit a specimen of every article manufactured by them, embracing wheelbarrows, both wood and iron, wheels, the well-known Columbus steel sinks, road plows, scrapers and express, railroad and freight trucks.

The Wayne Works, of Richmond, Ind., exhibit grain drills, seeders, force feed fertilizers, and their latest novelty, the

Dandy champion steel cart, of which several styles are exhibited. These carts are constructed with single and double seats, are easy of adjustment, and have a superior device in the way of spring.

The Richmond Machine Company display mule and gang saws, head blocks and horizontal engines.

The John H. McGowan Pump Company, Cincinnati, have on exhibition a very interesting display of their Rival boiler feeders, Rival and Duplex steam pumps and the Glide brass valve-box boiler feeders, tobacco presses and machinery. The center of their space is occupied by a water column about 12 inches in diameter and 15 feet high, the top of which is surmounted by a basin about 6 feet in diameter. In the center of this is located a flower vase. The water is forced through the column, filling the basin mentioned to overflowing and producing a very pleasant effect, particularly at night, and cooling the atmosphere very perceptibly for some distance around.

J. M. Robinson & Co., occupying space 9 x 25, exhibit several of their more prominent productions, among which are cornice brakes ranging from 4 up to 8 feet in size, range and safe makers' brakes, box bending machines, hand and power shears, double-acting punching presses, both hand and power.

Pierce, Butler & Pierce, Syracuse, N. Y., exhibit all the various sizes and combinations of the Florida steam heater.

Sebastian, May & Co., Cincinnati, Ohio, have a very fine exhibit of light iron working lathes running in sizes from 8 inches swing up to 18 inches, with distances between centers from 20 to 60 inches. In connection with their exhibit is also a display for Rice, Whitacre & Co., of Chicago, manufacturers of the Kriebel steam launch engine.

The National Machinery Company, of Griffin, Ohio, exhibit various sizes of bolt and nut machinery, of which they make a specialty.

The Laidlaw & Dunn Company, Cincinnati, exhibit a complete line of the Hero vertical boiler feeders, Standard Duplex pumps with brass removable water cylinders, tobacco machinery, &c. Six of these pumps are being used to supply the feeding of the Galloway boilers in the Park Hall, the elevator in the same hall supplying water to the grand waterfall in Horticultural Hall and the grand fountain in Park building. This firm also supplied all the pipe, fittings and valves for steam, water and fire purposes, and pipes and fittings for the extensive gas display in the buildings and streets approaching thereto, and the great electric light chandelier in Music Hall.

Lodge, Davis & Co., Cincinnati, occupy one of the largest spaces in the hall, and exhibit the most comprehensive display of machine tools in the entire building. The exhibit consists of five sizes of turret lathes, 13, 16, 18, 21 and 36 inches. The last three are cabinet styles for boring, chasing and turning taper without swiveling the head. A line of shapers is also exhibited, there being four sizes, 15, 20, 26 and 32 inches. The first three are geared and the 15 inch, operated with a rocker movement, has quick return and is fitted with a special device for altering the length of the stroke from 0 inch to 15 inches while in motion. There is also a device for adjusting the cutting tool to any location in which the work may be placed on the table. The shapers can be rapidly adjusted while in motion, and a shaft of any length may be put clear through directly under the cutter arm, thus enabling the operator to cut a key-way in a shaft at any point desired. All shapers are arranged to make any required changes from one point. A full line of drill presses are also exhibited, ranging in size from 20 to 38 inches swing.

The Coke Trade.

The lockout in the Western iron mills, which is now in its second week, has not as yet had any perceptible effect on coke shipments, nor will it be likely to have any for some weeks to come, should the lockout continue. A more hopeful feeling is being shown by the operators, and it is believed that an improvement in this industry will soon take place. For the week closing June 30 there were 9255 ovens in blast, out of a total of 13,061 ovens in the region, leaving only 3806 idle; the output for that week being estimated at 74,664 tons. For the week previous the figures were: Active ovens, 8903; idle, 4156; tonnage, 73,166. The resumption of a portion of the ovens of the McClure Coke Company which had been idle on account of a strike of the employees, accounts in part for the increase in the number of active ovens and the slight increase in tonnage. The shipments during the week were 4560 cars consigned as follows:

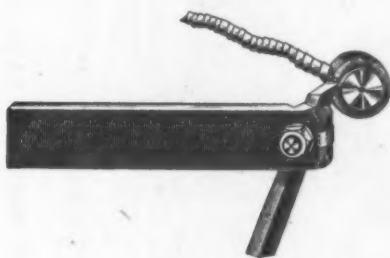


Fig. 1.

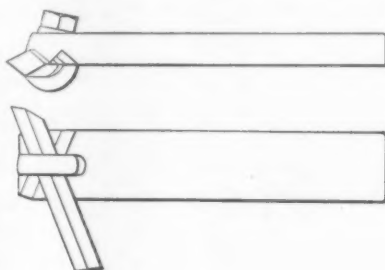


Fig. 2.

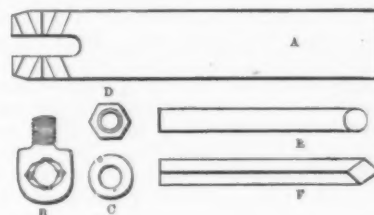


Fig. 3.

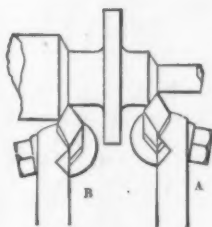


Fig. 4.

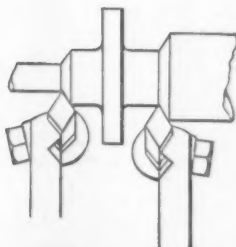


Fig. 5.

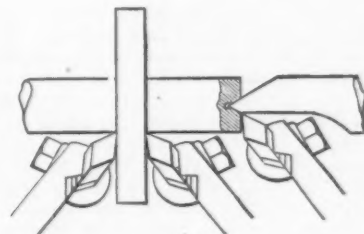


Fig. 6.

LATHE AND PLANER TOOL, MADE BY THE CAPITOL TOOL COMPANY, HARTFORD, CONN.

To Pittsburgh and the rivers, 1200; to the Shenango and Mahoning valleys, Chicago and other Western points, 2060 cars; to eastern points, 1300 cars. The figures for the previous week were: Pittsburgh, 1250; West, 2000; East, 900. The following is a comparative statement of the weekly shipments for the month of June:

	June 9	16	23	30	Total.
To Pittsburgh.....	1,200	1,250	1,250	1,200	4,900
To Western points.....	3,000	2,400	2,000	2,060	9,460
To Eastern points.....	1,350	1,150	900	1,300	4,800
Totals.....	5,550	4,800	4,150	4,560	19,160

The shipments for May were 24,800 cars, or an average of 918 cars per day for the 27 working days of that month. The shipments for June, as will be seen by the above statement, aggregate 19,160 cars, or an average of but 737 cars daily for the 26 working days of that month. The aggregate for May was consigned as follows: To Pittsburgh, 4300 cars; West, 13,800 cars, and to eastern points 6700 cars. The price of coke remains at \$1, although some sales have been made at 95 cents per ton. There is still some talk of an attempt to revive the old syndicate. Although no definite action has yet been taken in the matter, it is not likely that any decided efforts will be made to form a new syndicate until there

is some improvement in the iron trade, which will consequently cause an improvement in the demand for coke.

Seymour's Lathe and Planer Tool.

The Capitol Tool Company, of Hartford, Conn., are putting on the market a lathe and planer tool which, in general plan, may not be altogether unfamiliar to our readers. The engravings which we annex fully explain its features. The tool is designed to be an efficient and cheap substitute for forged tools for lathes and planers, rigidly holding its cutter and taking as heavy and clean cuts as a forged tool of the same size. It is cheap to use because the cutters are made by cutting from a bar of steel the length required and grinding the end to the desired angle. This plan allows the consumer to make his own cutters at small cost. It does not require an elevating tool block on the lathe, as the cutter can be raised or lowered in

Naval Progress.

The acts of March 3, 1885, August 3, 1886, and March 3, 1887, authorized the construction of ships to cost in the aggregate a trifle less than \$20,000,000. The amount thus far appropriated for these ships is \$8,315,000. This is exclusive of about \$7,000,000 appropriated for guns and armor in 1886 and 1887, of which about \$4,000,000 will be required to pay the contracts made with the Bethlehem Iron Works a year ago, leaving \$3,000,000 to the credit of the Secretary.

Leaving out the double-turreted monitors and the four cruisers, there have been spent on the ships ordered in the past three years \$2,403,935, and the balance on hand for them is \$3,453,848. The double-turreted monitor Miantonomoh will be finished in four months. The large cruiser Baltimore will be launched this month and finished in six months. The Vesuvius will be ready for delivery on September 1. The double-turreted monitor Puritan has had

her dock trial and has been accepted, but her armor has not been put on. The double-turreted monitor Amphitrite is ready for her steam trial, which will occur soon. The machinery for the double-turreted monitor Monadnock is in process of construction at Mare Island Navy Yard, from plans prepared in the Navy Department. Three years ago some of the forgings for the 6-inch guns for the Navy had to be imported from England, and all the forgings for the larger guns had to be brought from abroad. Now the forgings for 8-inch guns are made here, and the contract of last year with the Bethlehem Iron Works will make the United States independent of England, even in the case of forgings for the largest guns projected and for the heaviest steel shafting.

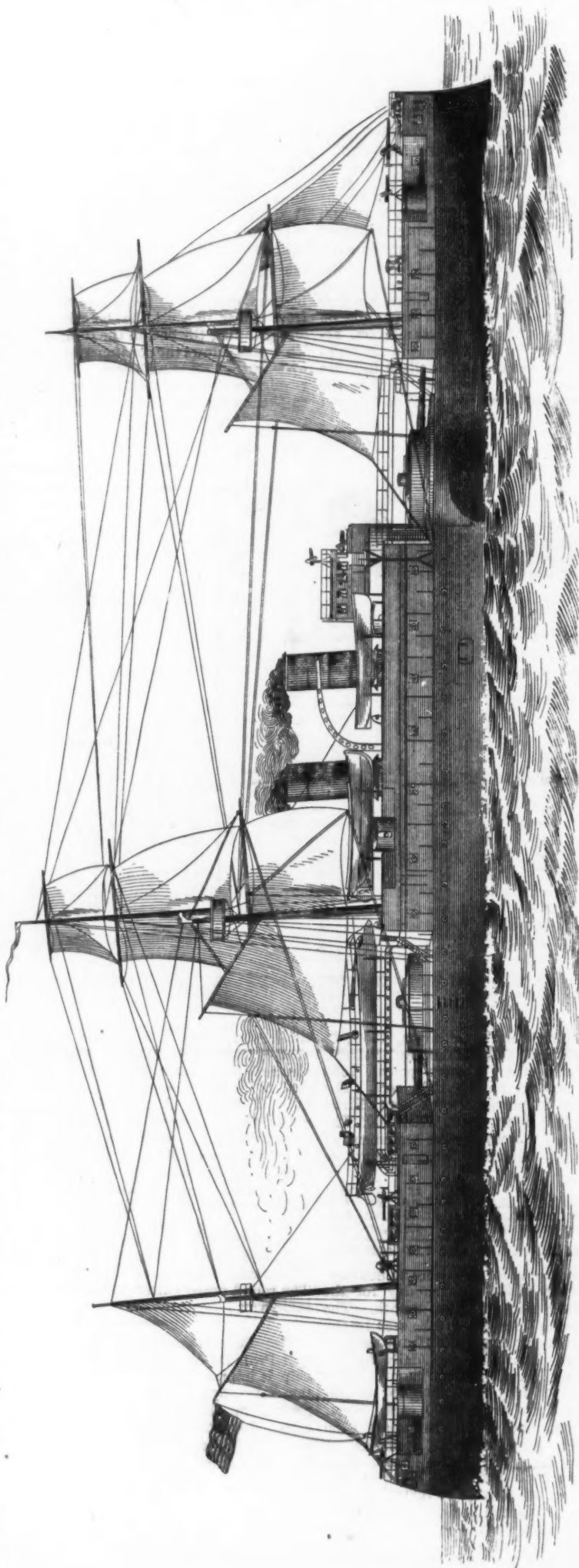
The stern-post of the cruiser San Francisco, which is to be built by the Union Iron Works, in San Francisco, has been successfully cast and the keel is now being laid. The Herreshoff Mfg. Company, at Bristol, R. I., have begun work on the new torpedo boat. This boat will be 138 feet long and will have twin screws, with engines capable of working up to 1800 horse-power. The contract speed is 25 knots an hour and the builders hope to attain 28 knots. The boat will be entirely of steel.

The Cruiser Maine.

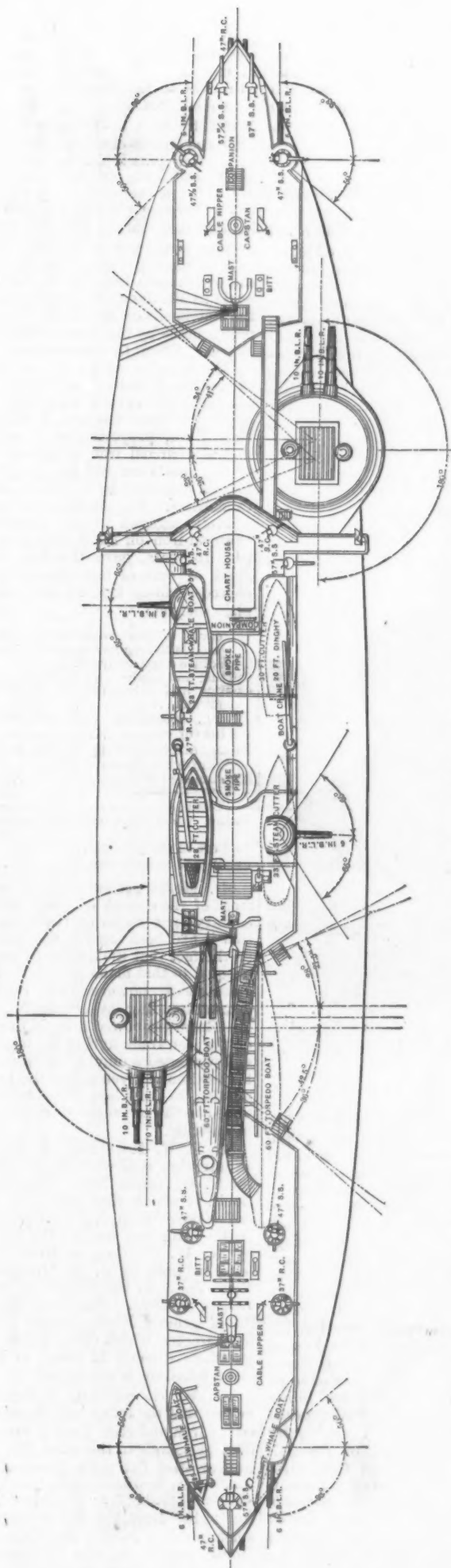
The progress which is being made in the preparations for commencing the building of the cruiser Maine, at the Brooklyn Navy Yard, lends special interest to the engravings which we publish in this issue, representing a general view and deck plans of the ship.

The Maine is a twin-screw armored turret vessel of the belted cruiser type, the vital parts being protected by a belt of armor from shot and shell, sufficient in length to insure stability even if the ends are riddled above the under-water protective decks extending from the ends of the belt to the extremities of the vessel. The vessel will have great coal endurance, good steaming and maneuvering qualities, every modern improvement in offensive and defensive matériel and every appliance to insure the comfort and health of officers and crew. In general appearance it resembles the Brazilian armored cruiser Riachuelo, but is larger, and carries heavier guns and thicker armor, besides having greater endurance. The general dimensions are as follows: Length between perpendiculars, 310 feet; breadth, extreme, 57 feet; mean draft of water, $21\frac{1}{2}$ feet; displacement to above draft, 6648 tons; indicated horse-power, 8750; speed, 17 knots; thickness of armor belt, 11 inches. The water-line belt of steel armor just mentioned extends for a length of about 180 feet amidships, and from 3 feet above to 4 feet below the water line. From a point 1 foot below the water line the thickness of the armor gradually decreases to 6 inches at the bottom. The wood backing is 8 inches thick. The plating behind the armor is in two thicknesses, stiffened by horizontal angle bars. The athwartship armor bulkhead at the forward end of the armor belt is 6 inches thick. The revolving turrets are protected by $10\frac{1}{2}$ inch steel armor, the gun port plates being $11\frac{1}{2}$ inches. The revolving parts of the turrets and the spaces required for loading are protected by fixed breastworks of oval shape, $10\frac{1}{2}$ inches thick. There is an armored conning tower, 10 inches thick, located on the central superstructure, elliptical in shape, measuring 10 feet 6 inches by 9 feet. An armored tube $4\frac{1}{2}$ inches thick runs from this tower to the armor deck, to protect steering gear, speaking-tubes, &c. The armor deck plating in the works of the armor belt will be in two thicknesses, so disposed that one layer of plating forms edge strips and butt straps for the other. The armor deck slopes from the top of the belt at its after end, the slope being 4 inches thick. The under-water deck at the end is 2 inches thick, protecting the magazine and steering gear, and so arranged as to give great stiffness to the ram bow. Cofferdams will be built above the engine and fire-room hatches to a height of 3 feet above the berth deck.

The vessel is bark rigged, spreading 7135 square feet of canvas. The fore and main masts are fitted with military tops, each mounting two machine guns. The rigging is brought down in such a manner as not to interfere with the fire of the guns. In addition to the armored conning tower there is a wooden chart-house, fitted with chart tables, speaking-tubes, indicators, steering-wheels, &c., for use when not in action. A steam steering-engine is fitted, in addition to the hand-steering arrangements, and there are steam capstans, windlasses and hoists. The forward hawse-pipes are so formed as to be adapted to a stockless anchor, the entrance being enlarged to take the shank and flukes of the anchor, the latter stowing itself automatically within the ship on heaving to. Shutters will be fitted over the mouths of the hawse-pipes. There are 174 water-tight compartments in the



U. S. ARMORED CRUISER MAINE, TO BE BUILT AT THE BROOKLYN NAVY YARD.



Main and Superstructure Decks.

U. S. ARMORED CRUISER MAINE, TO BE BUILT AT THE BROOKLYN NAVY YARD.

vessel and ample provision is made for natural light and ventilation by means of skylights, side-lights and cowls. Artificial ventilation is also provided for. The vitiated air of the engine-room will be withdrawn by the fans used for forced combustion. The explosive gases of the coal bunkers are led into the funnel casings and fresh-air pipes lead to the upper deck.

The pumping and draining system is very elaborate, every compartment of the vessel being in connection with powerful steam and hand pumps. The electric plant consists of four sets of dynamos and engines, so connected that any one can supply all the circuits for the incandescent lamps. There are three search-lights, any of which can be connected with any dynamo. These dynamos supply also light for internal illumination, side-lights, head-lights and lights in magazines and bunkers. In addition to the usual allowance of boats supplied to a man-of-war, including steam launch and cutter, there are two torpedo boats, 60 feet long. The height in the clear between the berth-deck planks and bottom of the main-deck beams is 7 feet 10 inches. The height in clear between the main-deck plank and bottom of superstructure decks is 6 feet 8 inches.

The vessel will have two vertical inverted triple-expansion engines in separate water-tight compartments, capable of developing 8750 horse-power. The cylinders are 35½, 57 and 88 inches in diameter respectively, with a stroke of 36 inches. There will be eight cylindrical return tubular boilers, 14 feet 8 inches diameter and 10 feet long, each having three furnaces, the total grate surface being 552 square feet. The fire-rooms are not to be put under pressure, but the forced draft will be secured by leading air to the under side of the grate-bars, forced through ducts by four blowers of 26,000 cubic feet capacity per minute. There are two three-bladed screws with a diameter of about 15 feet. The coal at normal draft is 400 tons, but the bunker capacity is 822 tons. The endurance and radius of action at different speeds with 400 tons of coal are: At 17 knots per hour, 960 knots; at 15 knots per hour, 1617 knots; at 10 knots per hour, 4250 knots.

The main battery consists of four 10-inch and six 6-inch breech-loading guns. The 10-inch guns are mounted in pairs in turrets protected by 10½ inches of steel armor. The turrets are placed *en echelon*, so that four guns can be fired ahead or astern. Each has a complete broadside-train on one side of 180° and on the other side of over 60°. Each turret has two loading positions. The guns are loaded, elevated and trained by the latest and most approved systems, all machinery being protected by oblong breastworks 10½ inches thick. The 6-inch guns are mounted on central pivot carriages, protected by segmental steel shields 2 inches thick. Two 6-inch guns are placed directly forward and two directly aft, having a train each of 147°. A 6-inch gun is mounted on each side of the central superstructure having a train of 130°. The forward and after guns can be converged at a point 150 feet from their respective ends. The four 10-inch and two 6-inch guns can be fired directly ahead or astern, and the broadside fire of four 10-inch and three 6-inch guns can be converged at a point 100 feet from the side. The secondary battery is so disposed as to secure a heavy bow and stern fire. It consists of four 57 mm. rapid-fire guns, four 47 mm. rapid-fire guns, four 47 mm. revolving cannon, nine 37 mm. revolving cannon and four Gatling guns. There are seven torpedo launching tubes or guns, three below the water and four on the berth deck. The 10-inch guns fire a projectile of 500 pounds weight with 250 pounds of powder, and have a maximum

effective range of about 9 miles. The weight of shot that can be fired ahead or astern from the main battery is 2300 pounds, and either side 2300 pounds.

The Hall Electric Pump.

The Hall Electric Pump Company, of Plainfield, N. J., with New York offices in the *Tribune* Building, have just made an interesting application of electricity to pumping for domestic water supply. The result is the Hall Electric Pump, of which we annex an engraving, and which is simply a combination of a rotary pump and an electric motor, the power being transmitted from the motor to the pump by a worm gear.

The illustration shows a motor of $\frac{1}{2}$ horsepower. The worm on the motor shaft is of steel and runs in a box of oil; the pinion attached to the pump shaft is of best bronze; the pump, of the most improved

the pump is at work refilling the tank, and it will not stop until the normal level is regained, when the rising float cuts the circuit and stops the motor. This automatic action of the machinery constitutes its leading recommendation. The electrical current being provided the motor and pump are always ready, and there is no use for attendance other than a weekly or fortnightly supply of oil.

The Metal Schedule Before the House.

On the 3d of the month the metal schedule was finally reached by the House, after a lengthy discussion relating to the duty on glass, which crowded over into the consideration of the iron duty, practically cutting off any discussion on the latter. Mr. McKinley offered as an amendment to make the duty on pig iron \$6.72—an amendment which was rejected, leaving the rate as now proposed under the Mills

attention to the fact that while the rate is \$6 per ton for pig metal it will be only \$8, or about that, for steel slabs.

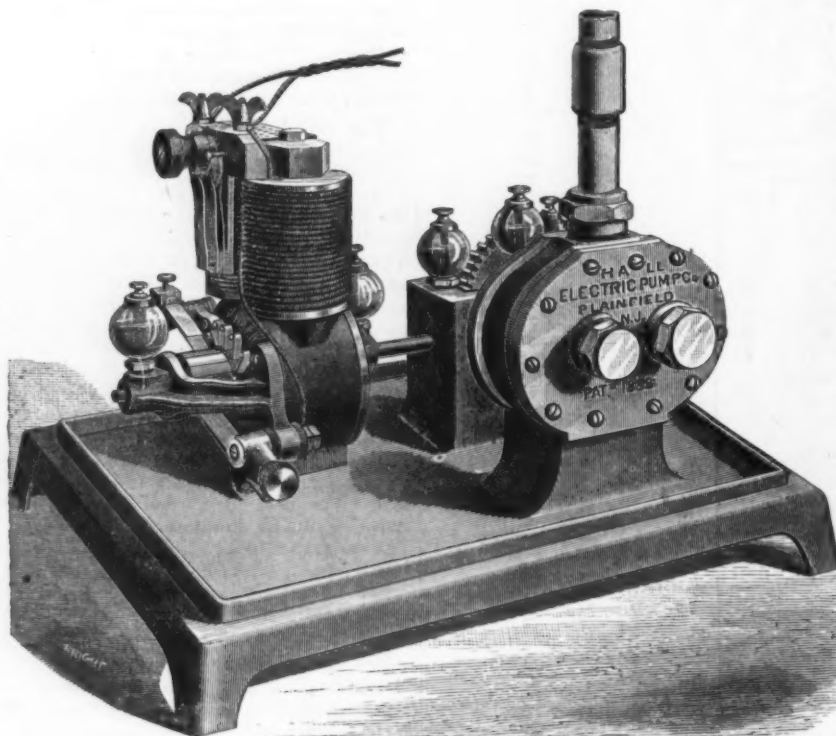
Mr. Dalzell seized the occasion to review the statements of Mr. Scott, of Erie, in regard to the cost of manufacturing steel rails at the Edgar Thomson Works. He stated that the cost of spiegeleisen or ferromanganese in every ton of steel rails produced in this country in 1887 was about \$3, an item which Mr. Scott had entirely overlooked. He objected also to the figure given as the market price of 1 ton of No. 1 Bessemer pig iron at the mill as \$18, holding that during the year 1887 a fair average would not be less than \$20. Mr. Dalzell succeeded also in putting on record the well-known letter of Mr. Andrew Carnegie to Mr. James M. Swank, in reply to the statements of Mr. Scott on the alleged profits made by the Edgar Thomson Steel Works. Then the amendment proposed by the member of the Ways and Means Committee, striking out "steel slabs and billets," was agreed to. The bar iron clause was then reached, J. H. Moffit, of New York, proposing as an amendment that all charcoal iron be subject to a duty of not less than \$22 per ton, instead of \$20, as proposed by the Ways and Means Committee. Mr. Moffit, who has been actively engaged in the manufacture of charcoal iron on Lake Champlain for the past 16 years, gave the following statement of cost of manufacturing a ton of charcoal bloom iron in the Lake Champlain district:

7½ cords of coal wood on the stump (which is the amount required to manufacture a ton of iron).....	\$0.75
Cutting and hauling, at \$1.50 per cord.....	11.25
Coaling and delivering 340 bushels of charcoal.....	7.00
Mining, separating and transporting 2 tons of ore.....	13.00
Making and hammering the iron, including superintendence.....	8.00
Maintenance of plant.....	2.00
Total.....	\$42.00
Deduct value of wood on the stump.....	\$0.75
And ore in the ground.....	.30
Labor cost in each ton.....	\$1.05
	\$40.95

Mr. Moffit presented an official statement of the output of ore blooms in the country for a series of years, and showed that it had been steadily declining in spite of the fact that the quality of the product is equal to that made anywhere else. The amendment, however, was rejected, the clause standing as originally proposed. Mr. Burrows showed a rapid development of the iron trade during the last 40 years, and presented a number of abstracts from the testimony given before the Tariff Commission, to show how prices have been reduced to the consumer during the period in question.

Mr. R. W. Townshend, of Illinois, had an interview read with N. O. Nelson, of the N. O. Nelson Mfg. Company, of St. Louis, in which that gentleman put himself on record as an opponent of a protective tariff. This was met by the presentation by N. W. Nutting, of New York, of a letter written by J. W. McGranahan, of New York, to the editor of the *Tariff League Bulletin*. The House then drifted into a general debate, largely political in its character, which did not deal with the questions directly at issue, so far as the metal schedule is concerned.

Mr. W. H. Sowden, of Pennsylvania, moved that the following clause be amended: "Iron and steel T-rails, weighing not over 25 pounds to the yard, \$14 per ton; iron or steel flat rails, punched, \$15 per ton." Mr. Sowden's amendment is to substitute "\$17.92" for "\$14," and "\$20.16" for "\$15" from the above clause. This amendment was also rejected, and the House passed to the following item: "Round iron, in coils or rods, less than $\frac{1}{8}$ inch in diameter, and bars or shapes of rolled iron not specially enumerated or



ELECTRIC PUMP, BUILT BY THE HALL ELECTRIC PUMP COMPANY, PLAINFIELD, N. J.

rotary principle, is also of bronze; the bed plate is of iron. Self-feeding oil cups, each containing one or more week's supply of oil according to the work required, keep all bearings lubricated, and when the pump is at rest no oil escapes. The floor space required is 15 inches by 16 inches, and the height of the pump is 12 inches. A neat hardwood case keeps out all dust or dirt and prevents meddling with the motor. The electricity must be taken from a dynamo, and either an arc or an incandescent circuit can be used, but the latter is always preferable on account of its safety. In the tank a snap electric switch regulates the supply of water. A common ball float attached to the switch closes or cuts the circuit as water is drawn off, or is returned to the tank.

The action of the pump is purely automatic. Connection is made with the electric circuit by the two wires shown at top of motor and at the switch in the tank. Water is drawn in a bathroom, in the kitchen, the laundry or bedroom, and as soon as the ball float has dropped to the point to which it is regulated, the switch is snapped by the weight of the ball in falling, the circuit is closed, and instantly

bill—\$6 per ton. An amendment to strike out the clause, "Iron railway bars weighing more than 25 pounds to the yard, \$11 per ton," was rejected, leaving the rate as proposed. Mr. McMillen, a member of the Ways and Means Committee, proposed to strike out the words "slabs and billets of steel" out of the following: "Steel railway bars and railway bars made in part of steel, weighing more than 25 pounds to the yard, and slabs and billets of steel, \$11 per ton." The reason given for this amendment was that the railroad bar is the advanced product of the billets and that the Ways and Means Committee did not think it proper to fix the same rate of duty on slabs and billets as fixed upon the more advanced product—namely, the railroad bar. Upon inquiry emanating from Mr. Bayne, of Pennsylvania, the Ways and Means Committee stated that slabs will remain as at present, 45 per cent. Mr. Bayne called attention to the fact that the equivalent of this 45 per cent. ad valorem rate of duty is about \$8 per ton. He urged that the duty is too low and that there ought to be some disposition to rectify the error made and put steel slabs at the proper rate. He called

provided for, 1 cent per pound." Mr. Breckinridge, of Arkansas, a member of the committee, offered the following amendment: "Iron or steel, flat, with longitudinal ribs, for the manufacture of fences, $\frac{1}{16}$ cent per pound." In reply to the question of J. Buchanan, of New Jersey, whether the paragraph in question does not in effect propose a change of duty on one class of rods, advancing the rate on those rods which are between $\frac{1}{16}$ inch in diameter and No. 5 wire gauge, from $\frac{1}{16}$ cent to 1 cent a pound, Mr. Breckinridge replied that the committee did not believe that the bill has that effect. He stated that the words of the present law are not changed, and it continues to stand: "Iron or steel rivet, screw, rail and fence-wire rods, round, in coils or loops, not lighter than No. 5 wire gauge, valued at $3\frac{1}{2}$ cents or less per pound, $\frac{1}{16}$ cent per pound." Mr. Buchanan urged that the item proposed would be held to embrace all sizes below $\frac{1}{16}$ inch in diameter, and was answered again by Mr. Breckinridge that they did not understand them in that way, that the item enumerated is not in the bill, and consequently remains unchanged as in the present law. The amendment making the rate of duty on "flat iron or steel, with longitudinal ribs, $\frac{1}{16}$ cent per pound" was then accepted. Passing to the sheet-iron clause, Mr. McKinley's amendment to strike out the paragraph was rejected without debate.

The hoop iron clause was then taken up, and the discussion naturally drifted to cotton ties, which, however, is to be taken up in another paragraph of the bill. Mr. McKinley's amendment to strike out the entire paragraph was lost. The item "cut tacks, brads or sprigs, 35 per cent. ad valorem" was taken up, the existing law providing as follows: "Cut tacks, brads, or sprigs, not exceeding 16 ounces to the 1000, $2\frac{1}{2}$ cents per 1000; exceeding 16 ounces to the 1000, 3 cents per pound." Attention was called to the fact that for the first time thus far in the metal schedule the committee has changed a specific to an ad valorem rate of duty. Mr. Breckinridge stated that not having a guide or a record of any statistics which would give the equivalent of a fair ad valorem rate, the committee had to give up entirely trying to find a specific rate, and upon this particular item to fix the ad valorem rate established by the bill, which is the ad valorem specific of the different items. This led to an extended debate on the merits of ad valorem and specific duties. The discussion appears to have ended without any vote on the pending item.

"Iron or steel railway fish-plates or splice-bars, $\frac{1}{16}$ cent per pound" was the next item taken up, to which an amendment was offered making the rate 1 cent per pound, Mr. Buchanan urging that since bar iron was made $\frac{1}{16}$ cent a pound it would be only fair to the maker of fish-plates to place the duty at a rate more in proportion with that of the raw material.

On Saturday, July 7, the tariff was again taken up, the proposal to raise the duty on fish plates to 1 cent per pound being rejected. Mr. Bayne moved to strike out the paragraph making the duty on "wrought iron or steel spikes, nuts and washers, and horse, mule or ox shoes $1\frac{1}{2}$ cents per pound," on the ground that the reduction of the surplus is not likely to be facilitated to any great extent by embodying the item in the bill. The amendment was rejected, and the House passed to the item "iron or steel rivets, bolts, with or without threads or nuts, or bolt blanks, and finished hinges or hinge blanks, $1\frac{1}{2}$ cents per pound." Mr. Buchanan offered as an amendment the insertion of a new paragraph, reading: "Iron or steel rivet, screw, nail and fence wire rods, round, in coils and loops, not lighter than No. 5 wire gauge, valued at $3\frac{1}{2}$ cents or less per

pound, 1 cent per pound." He said this amendment was offered in order to make two provisions in reference to iron rods harmonize. The sizes of iron rods between No. 5 wire gauge and $\frac{1}{16}$ inch in diameter are put in one part of the law at one rate of duty and in another part at another rate. In the Mills bill but one of these provisions is copied, and in that provision there is a rate fixed of 1 cent per pound. The amendment, however, was rejected, as was also the motion to strike out the following paragraphs:

"Horseshoe nails, hob-nails and wire nails, and all other wrought iron or steel nails, not specially enumerated or provided for, $2\frac{1}{2}$ cents per pound."

"Boiler-tubes, or other tubes, or flues, or stays of wrought iron or steel, $1\frac{1}{2}$ cents per pound."

The Mills bill fixes "files, file-blanks, rasps and floats of all cuts and kinds, 35 per cent. ad valorem," for which Mr. Farquhar, of New York, moved to substitute the following: "Files, file-blanks, rasps and floats of all cuts and kinds, 4 inches in length and under, 35 cents per dozen; over 4 inches in length and under 9 inches, 75 cents per dozen; 9 inches in length and under 14 inches, \$1.50 per dozen; 14 inches in length and over, \$2.50 per dozen." Mr. Farquhar submitted a letter by Mr. W. T. Nicholson, manager of the Nicholson File Works, of Providence, R. I., in which that expert called attention to the fact that when he entered the business in 1865 the English list price on the coarser class of goods was \$7 per dozen. He began selling at \$7, 10 per cent. off. To-day he states that he sells the same goods for \$2.30 per dozen, the market price being \$7, 70 per cent. off, or \$2.10. The substitution of ad valorem for a specific duty, as proposed in this file item, was made the subject of a prolonged discussion. Mr. H. J. Spooner, of Rhode Island, reviewing the duty on files, alluded to the fact that labor is an important interest concerned in its manufacture. This he illustrated by the recital of facts which he stated to have from unquestionable authority. "A pound of steel, from which the finest grades of these files are made, costs 40 cents, and when made into files its value is enhanced to \$59.35, an increase of 14,740 per cent. The great cost of this manufacture is in the labor employed, and it is principally for the protection of that labor that such protective duties as existing law provides are required. Upon 1 pound of steel used in the manufacture of medium grades of files, costing 38 cents, the value is increased by manufacture into such files to \$18.20, an increase of 4690 per cent.; and in the coarser grades of files a pound of steel costing 6 cents is enhanced in value by manufacture 1640 per cent." Mr. Farquhar's amendment was rejected, the House passing to the next clause relating to "iron or steel beams, girders, joists, angles, channels, car-track channels, T columns and posts, or parts or sections of columns and posts, deck and bulb beams and building forms, together with all other structural shapes of iron or steel, $\frac{1}{16}$ cent per pound." Mr. J. D. Long, of Massachusetts, secured consent at this point to read a letter written by Loring & Parks, Cobb & Drew and the Plymouth Mills, all of Plymouth, on the tack duty. We quote from it the following: "Iron tack plate costs English tack manufacturers from $1\frac{1}{2}$ to $1\frac{3}{4}$ cents a pound. Ours costs us 2 cents a pound, or about 33 $\frac{1}{3}$ per cent. more. English tack manufacturers pay their tack-makers 1s. 3d., or say 31 cents per 100,000, while we pay 50, 60 and 75 cents per 100,000. For the same quality and grade of work we pay 100 per cent. for cutting. If the duty is reduced to 35 per cent. ad valorem we must reduce the wages of our help at least 33 $\frac{1}{3}$ per cent. to compete."

Referring to the item on "beams and structural iron," Mr. Buchanan, of New Jersey, read from a letter from an officer of the New Jersey Steel and Iron Company, in which the proposed duty was denounced as an outrage. Attention was called to the fact that while common bar iron is placed at $\frac{1}{16}$ cent a pound, the rate proposed on structural iron difficult to roll is only $\frac{1}{16}$ cent. Mr. Mills claimed that even at the reduction proposed the duty was equivalent to 49 per cent., and pressing a vote secured a rejection of the amendment to strike out the paragraph in question. A similar fate was met by the clause relating to "steel wheels, tires and tire-blanks."

The proposed item relating to wood screws, placing them at 35 per cent. ad valorem, was struck out with the consent of the Ways and Means Committee.

The House then drifted into a long discussion of the duty on lead in argentiferous ores, and finally took up the item of "needles for knitting and sewing machines, 20 per cent. ad valorem." A motion to substitute 35 per cent. for the 20 proposed under the bill was rejected, in spite of the statements contained in a letter written by Mr. George H. Bleloch, of Springfield, Mass., from which quotations were read.

The proposed 35 per cent. ad valorem rate of duty on "pen-knives, pocket-knives of all kinds and razors," was struck out at the suggestion of Mr. Mills, but the proposal to substitute 10 cents per gross for the 35 per cent. ad valorem rate was defeated.

Our Fortifications.—The scope of the Fortification bill, to be reported to the House by the Appropriations Committee, is for an expenditure of \$36,000,000. It provides for experiments with iron guns of 10, 12, 14, 16, 18 and 20 inch caliber; converted guns, multicharge and wire-bound guns, for mortars 12 inches in caliber, steel, cast iron, muzzle and breech-loading. The Secretary of War, Secretary of the Navy, Chief of Ordnance of the Army and Navy and several civilian experts are to constitute the board, who can enter into a contract for furnishing any of the guns that pass the test and are deemed fit to use in either branch of the service. The appropriation is to be continued indefinitely and not to be covered into the Treasury. If contractors, after the expiration of the time specified, fail to deliver the guns, they are to pay to the Government 6 per cent. interest on the contract price. If the guns are furnished before the specified time, the contractors are to receive 6 per cent. for their prompt service. The details of the bill cover 64 printed pages, and the probability is that it will not be considered at this session.

The Longest Tangent in the World.—The new Argentine-Pacific Railroad, from Buenos Ayres to the foot of the Andes, has on it what is probably the longest tangent in the world. This is 340 km. (211 miles) without a curve. It is also a remarkable fact that in this distance there is not a single bridge and no opening larger than an ordinary culvert. The level nature of the country will be appreciated from the statement of the further fact that on the 340 km. there is no cut greater than 1 m. in depth and no fill of a height exceeding 1 m. The country, in fact, seems to be almost an ideal one for railroad construction. There are some drawbacks, however, one being that there is almost an entire absence of wood on the plain across which the western end of the road is located. This has led to the extensive use of metallic ties, which will be used on nearly the entire road. Work has already been begun on the mountain section of the road, which is to cross the Andes and unite with the Chilean line.

THE WEEK.

Immigration at this port during the 12 months ended June 30 was larger than ever before, excepting the years 1881, 1882 and 1883. The total was 550,000 persons, which is 60,000 in excess of the previous year, and there are no signs of a decrease in the future.

The exact amount paid thus far for work and materials on the new City Hall in Philadelphia is \$12,025,332.31.

The French Chamber of Deputies has approved the provision of the Factory bill which makes it incumbent upon employers to give their operatives one day's rest weekly. "Fearing to appear too clerical," the Chamber refused to specify that this day should be Sunday.

The population of Utah is now about 200,000. Of this number about 55,000 are Gentiles. The Mormons follow agriculture mainly as a means of livelihood, while the Gentiles are largely engaged in mining, trade and the practice of the professions. The Territory is 325 miles in length by 300 miles in breadth, and it consists of a succession of rugged mountains holding in their arms fertile valleys, some of great extent. The assessed valuation of the Territory, not including the mines, is about \$35,000,000, and of this amount the Mormons own about 60 per cent., the Gentiles 30 per cent., and the remainder is the property of railroads. Of the resources of the country Judge Powers, of Salt Lake City, speaks with enthusiasm. He says: "We have pure alabaster, fine Carrara marble, magnificent granite, elegant brown stone and white sand stone right at our doors. We have 100 square miles of coal fields, mountains of copper and more mountains of iron. We have great beds of sulphur that range in purity from 45 to 99 per cent. We have two saltpeter mines, the only ones in North America; lakes of borax, wells of petroleum and mines of rock salt. In addition we can manufacture pure salt for \$1.50 per ton from the Great Salt Lake. Salt Lake City has a population of 35,000."

The new bill for the protection of New York harbor, which has become a law by the President's signature and goes into effect at once, provides that the President shall designate an officer of the United States Navy as supervisor of the harbor. It shall be his duty to define the exact limits within which deposits of refuse may be made and to grant permits for that purpose. Discharging or depositing matter of any kind in New York harbor or adjacent waters without a permit from this officer, or otherwise than as sanctioned by him, is declared a misdemeanor, and all persons implicated in such an offense are subject to fine of from \$250 to \$2500 and imprisonment of from 30 days to one year. The penalties imposed by the act are made applicable to all officers of tugs, scows or other vessels aiding in unlawful dumping into the harbor, to persons who employ others to make disposition of refuse and to all directly or indirectly concerned. The supervisor of the harbor is made responsible for the enforcement of the law, and is empowered to spend \$30,000 in carrying it out by the employment of patrol boats and by such other means as he sees fit.

Four river thieves who have successfully followed their profession for some months past at the wharves of the Ocean Steam Navigation Company, were captured while at work in the hold of a vessel abstracting cotton from the bales. They were detected at night by special officers disguised as longshoremen. On a table in the captain's cabin was a well-made steel bar with a split end, made to fit beneath the closely

knitted iron bands which inclose the cotton in a bale. The clamps on the hoops were turned, two layers of cotton extracted, the bales rehooped and stamped upon until the partially released contents filled up the space. Thousands of bales of cotton had been treated in this way, and the proceeds were divided equally between six conspirators. The cotton once removed cannot be identified, and its sale cannot be accepted as evidence of guilt.

Notice was served on the Iowa Railroad commissioners by an order from Justice Miller for them to appear in the United States Circuit Court at a hearing in chancery before him in August 6. It is expected that at the time named application will be made to Justice Miller for a permanent injunction restraining the commissioners from putting into force the new schedule of rates.

The Minneapolis Chamber of Commerce protests against the enforcement of any rule prohibiting railroads from charging less on through shipments for export than for delivery at the seaboard.

The Brotherhood of Locomotive Engineers observe the 25th anniversary of their organization in Detroit, August 17th, and 5000 engineers are expected to participate, from all parts of the United States and the Dominion of Canada.

One of the largest cargoes of iron ore ever received from a foreign port was discharged at Port Richmond last week for the Bethlehem Iron Company. It comprised 3650 tons, and was from the mines at Santiago de Cuba.

The Southern Pacific Company contemplate the construction of a \$2,000,000 bridge over the Carguinez Straits, which will greatly facilitate the conduct of its business. Engineer Thomas, of the Chicago Bridge Company, and J. S. Santher are making investigations to determine the feasibility of the project. The bridge will enable the Southern Pacific to save considerable time and expense in the operation of its Sacramento division.

The railroad companies in the vicinity of New York are preparing for the opening of the Arthur Kill bridge to Staten Island. The Pennsylvania Railway Company have completed a new ferry-house for their Staten Island ferry. The New Jersey Central Company are preparing to build a dock alongside that of the Pennsylvania. The Bayonne and Jersey City Railroad, which connects with the New Jersey Junction Railroad, an extension of the New York Central and West Shore Railways, ends on the Kill von Kull a half mile below the Jersey Central's dock. The Baltimore and Ohio's connection will be completed by the middle of September.

Consul Griffin, at Sydney, New South Wales, in a report on Australian wool and wool growing, says: "There is at present every appearance of a larger wool trade than for the previous year. While the colonial wool product increased between the years 1872 and 1887 from 743,000 to 1,444,000 bales, the amount realized increased only from \$95,820,000 to \$98,300,000. It is estimated that to realize the same amount of money the colonies must now grow 80 per cent. more wool than 15 years ago. The shipments of wool to the United States from Melbourne for the season of 1887-88 amounted to 19,909 bales, compared to 15,360 for 1886-87, and 20,161 for 1885-86. It has been observed that from 1879 to 1887 River Plate and colonial wool increased from 1,500,000 to 2,000,000 bales, or an increase of 500,000; while from 1877 to 1887 the supplies of Australasian, South African, River Plate and United States wool increased from 2,000,000 to 2,700,000 bales, or an increase of 700,000. Yet we find that the con-

sumption has kept pace with the supply. New South Wales alone increased the number of her sheep during the year just closed fully 8,000,000, and the lowest estimate of the increase in the whole of the whole group that I have seen is 12,000,000."

According to the new Domesday Book of England, about two-thirds of the land of England and Wales is held by 10,207 owners, of whom 16 proprietors outside of London were returned in 1873 as either holding more than 50,000 acres, or having estimated rentals of over \$500,000 a year. They were:

	Acres.	Rental.
Duke of Northumberland..	181,616	\$809,370
Duke of Devonshire.....	126,904	638,165
Sir W. W. Wynn.....	87,526	214,410
Duke of Cleveland.....	81,441	309,230
Earl of Carlisle.....	75,540	248,005
Duke of Bedford.....	74,996	628,265
Earl of Lonsdale.....	67,457	349,795
Earl of Powis.....	60,531	313,470
Duke of Rutland.....	57,083	354,990
Earl of Derby.....	56,471	815,975
Earl of Yarborough.....	55,272	381,130
Lord Leonfield.....	54,615	259,700
Marquis of Ailesbury.....	53,362	290,150
Earl Cawdor.....	51,517	174,935
Sir Lawrence Palk.....	10,109	546,375
Sir J. W. Ramsden.....	8,589	838,005

This table is for England and Wales alone, and it leaves out the Duke of Westminster as being a great landed proprietor of London. The number of owners of land in Great Britain and Ireland, exclusive of London, was officially returned in 1876 as:

	Less than one acre.	More than one acre.	Total.
England and Wales.....	703,289	269,547	972,836
Scotland.....	113,005	19,225	132,230
Ireland.....	36,114	32,614	68,728
Total.....	852,408	321,386	1,173,794

The total number of acres accounted for in the returns is 72,119,882. In England and Wales 874 owners held 9,367,031 acres, or more than one-fourth of the country. Less than 4 per cent. of the population of Scotland, about 5 per cent. in England, and less than 2 per cent. in Ireland, have a share in the ownership of the soil.

Seattle, in Washington Territory, on Puget Sound, is fast filling up with population, most of whom are lumbermen or miners. A good saw-mill hand can command \$4 a day and board. All kinds of permanent business pays just now, and lots fully two miles in the forest are valued at \$500. Enterprising capitalists have driven piles around whole blocks a half mile out in the sound, expecting it to be filled in for building purposes. Seattle claims to have 18,000 inhabitants.

The Italian immigrants in New York City are suffering from destitution, many of them being without employment. The excessive number of arrivals this year is accounted for by the General Manager of the Italian Emigration Society, who says: "Last year 43,725 Italian emigrants landed here. Many of them got work at good wages, and the evidence of their success was presented to those left at home in the tangible shape of cash remittances or in their return to Italy for their families. These facts were taken advantage of by conscienceless scoundrels to encourage an altogether false idea of the conditions of labor here. They stimulated emigration to a most injurious extent. Having fired a poor peasant's mind with visions of a land where work was abundant for all and pay large, they would advance him a passage ticket worth 115 francs and take for it a mortgage upon all his little possessions for 250 francs. They were simply swindlers who cared nothing what became of their victims here so long as they got all that they had in Italy. In this way Italian emigration has been forced up until already by July 1 no less than 98,155 of that class of emigrants had arrived here

this year. Of these nearly all were peasants. There were a few artisans, but probably 90 per cent. at least were agriculturists and common laborers, accustomed to earn from 25 to 40 cents a day in Italy, and to whom the promise of \$1 a day here seemed magnificent."

The value of silks imported at New York during the first half of the year 1888 is \$1,955,202, as compared with \$1,800,000 for the corresponding period in 1884. The imports of silk piece goods steadily diminish year by year, despite the increase of population, while manufacturers of combined silk and cotton fully make up this deficiency.

The Senate Judiciary Committee in Congress responded to the resolution of Mr. Stewart directing them to ascertain whether under the Tariff Act of 1883 lead ore is exempt from duty if it contains gold or silver less in quantity but greater in value than the value of the lead in the ore. The committee express the opinion that under such circumstances lead ore should be exempt from duty, since the silver and gold which predominate are admitted free. A letter from Assistant-Secretary Maynard, taking a similar view, accompanies the report.

Respecting American ware in Austria, United States Consul Jonas, at Prague, says: "This consulate frequently receives inquiries from American commercial and trading firms, as well as manufacturers, touching exports to and imports from the United States, and concerning articles of American origin which could possibly find a market in this country. Different articles sold in this market under an American label and believed by the purchasers to be of genuine American origin, are really nothing but cheap German and British imitations. It may safely be said that numerous articles of our American hardware, mechanics' tools, farming implements and family utensils would find a market in this country if they could be introduced and brought to the notice of the public."

The present condition of the new Croton Aqueduct and the future of the water supply in New York City are subjects incidentally touched upon by General Newton, Commissioner of Public Works, in his testimony before Senator Fassett's investigating committee. General Newton thought the tunnel would be completed in a few months. He estimated the cost of the work at about \$16,000,000. The General said that he expected that the city would be supplied with water as soon as the tunnel was completed, but qualified that statement later by saying that the supply would benefit the citizens as soon as the reservoirs are completed, which he thinks will be in about five years. There will be an abundance of water in five or six years. One reservoir will hold about 9,000,000,000 gallons. The construction of these reservoirs and the dam was opposed by citizens, and therefore the work was greatly delayed. The question whether the Quaker Bridge dam should be a straight dam or a curve had been submitted to three distinguished engineers. Until a decision had been arrived at by them it might be said there would be no plans in existence. He thought \$6,000,000 would cover the expense of the structure. The dam could be constructed safely in six years.

W. H. Vanderbilt's new library building on Thirteenth street, near Eighth avenue, was last week informally presented to the Jackson Square Branch of the New York Free Circulating Library. The building is three stories high and cost \$40,000. The style is Dutch, with a gable. The material of the front is dull red brick with stone and terra-cotta trimmings. The first floor is occupied by the reception-room and

book-cases. On the second floor is the reading-room. The finish of this room is imitation antique oak. A Dutch clock and open fireplace make it homelike. On the third floor the librarian in charge. There are 6000 volumes already on the shelves. Any person of good character, over 12 years of age, will be free to the reading-room or to take away books for a week. There are four libraries of the kind now in the city—the Jackson Square, the Bond Street, the Ottendorfer, on Second avenue, and the Bruce, on West Forty-second street.

The rubber trust has petered out, owing to the unwillingness of a large rubber manufacturer in New Jersey to enter the combination. In January last the rubber manufacturers of New England got together and determined to combine their properties in a trust, which should operate all the rubber shoe concerns in the country. The idea was generally popular, with the exception noted. The Jerseyman finally, in order that the disastrous competition that has been going on for several years should cease, agreed to enter into a combination on prices which should in no way interfere with the individual holdings of the various concerns. It since turns out that the price agreement is in all respects as satisfactory as could have been expected under a trust system, and so far this year at least is likely to remain in force.

Second Assistant Postmaster General Knott has had prepared for the Cincinnati Exposition an artistic chart, illustrative of the development of the postal service in the United States since the establishment of the Government. The carrying service on June 30, 1888, is given as follows:

	Number of routes.	Length of routes, miles.	Number of miles traveled last year.
Railroad service....	1,987	148,007	185,315,082
Steamboat service..	125	10,590	3,162,808
Mail messenger service.....	5,915	4,602	10,632,148
Special office service	2,630	16,709	3,476,213
Star service.....	14,247	226,122	82,322,420
Totals.....	24,904	406,030	284,908,671

The number of miles traveled is over 11,000 times the circumference of the globe. During the last two years the number of railroad routes has been increased by 285, steamboat routes by 9 and Star routes by 1002. The number of miles of railroad service has been increased by 19,074, and the whole number of miles traveled in all branches of the service by 26,120,606.

The New York City Division of the Brotherhood of Locomotive Engineers have voted to assess themselves \$5 each per month, for the benefit of the strikers on the Burlington system.

Commissioner Stephenson, of the State Board of Emigration, who has just returned from a trip West, says there is room enough in America for all the emigrants who may come to our shores. In this respect his opinion has suddenly changed. At the Duluth coal and ore docks men receive 50 cents per hour, or \$5 per day, while farm hands in Dakota get \$2 a day and board, the farmers complaining that they cannot get help enough to get in the wheat harvest.

The Mexican Central freight depot at Paso del Norte was burned a few days ago, entailing a loss of \$500,000. Seventy-two cars were destroyed, 20 of them loaded with mining machinery and valuable merchandise.

Neither General Master Workman Powderly nor President Gompers of the National Federation of Trades is a candidate for the office of Commissioner of Labor. In labor circles it is thought the President will appoint Carroll D. Wright.

MANUFACTURING.

Iron and Steel.

The employees of the Beaver Falls Iron Company, of Beaver Falls, Pa., are on a strike. On receiving their pay recently some of the workers found that their wages had been computed at the rate of \$9.60 per ton, instead of \$10.40, as paid heretofore. The men refused to accept the reduction and stopped work. About 150 men were thrown out of employment.

The Sergeant Mfg. Company, capital stock, \$25,000, have been chartered by B. E. Sergeant, George S. Sergeant and William T. Sergeant, to operate an iron foundry now erected at Greensboro, S. C.

Wm. Swindell & Bros., engineers and contractors, of Pittsburgh, have received a contract from the Passaic Rolling Mill Company, of Paterson, N. J., for three of their improved Siemens regenerative furnaces—one for the bar mill, one for the guide mill, and a double puddling furnace; also a block of four of their improved gas producers and a brick gas flue, 6 feet in diameter, 200 feet long, to carry gas to nine regenerative puddling furnaces and three regenerative heating furnaces.

M. V. Smith, metallurgical engineer, of Pittsburgh, has received an order for a set of drawings and specifications for his improved artificial gas producer, to be sent to Mons. Lucien Arbel, of Rive-de-Gier, France.

Joshua Lancaster, president of the furnace company at Talladega, arrived in that place during the past week from his home at Port Madac, England. A large force of hands is now pushing the work on the company's two furnaces, which are expected to be in operation by the close of summer.

Work on the furnace at Riverside, belonging to the Montgomery Chemical and Furnace Company, is to be resumed. Over \$70,000 has already been expended on this plant. The Louisville and Nashville Railroad Company have offered to buy an interest in this furnace and the furnace people now have the matter under advisement.

Furnace prospectors have been visiting Jacksonville and Crow Plains recently in the interests of new plants at both of these places, and as they are in the center of the finest car-wheel iron region of the State there is every reason for believing that at no distant day companies will be organized and furnaces built in both towns.

The Westerman Iron Rolling Mills, situated on the Fifteen Mile Creek, a mile from Lockport Depot, N. Y., were destroyed by fire 3d inst. The fire caught in the roof from the high chimney about noon, and in 15 minutes the entire mill was burned out so that nothing but the rafters remained. The warehouse to the right was burned, as was also the bridge crossing the creek. The mills were a complete loss, and the fire throws 75 men out of employment. The loss is placed by the firm, composed of George Westerman, Sr., and Calvin G. Sutliff, at \$50,000. There is an insurance of \$8500. In 1881, this same month, the mill was burned in the same manner. The firm state that they will rebuild and be running in 60 days.

The work of enlargement at the car works of the United States Rolling Stock Company, at Anniston, Ala., is progressing steadily. The annex to the machine shop and that to the main building are both completed. In the rolling mill three new furnaces are being erected, and three new hammers are being prepared for their position. Work will begin shortly on the new building proposed, which will be quite an

extensive one, 1500 feet long and 105 feet wide. This building will be used for a wood-working shop, and the machinery for the interior will be propelled by a 500 horse-power engine.

The Sheffield and Birmingham Coal, Iron and Railway Company, of Sheffield, Ala., placed their second furnace in blast a few days ago. The stove works at Sheffield, which were recently put into operation, are now turning out some fine goods, the manufacturers alleging that the iron from the furnaces at that place is the best they ever saw for the manufacture of toves.

Thompson C. Gill & Co., Philadelphia, who purchased the contents of the sheet mills of the Bay State Iron Company, South Boston, have finished dismantling this portion of the plant. They also purchased the puddle mill belonging to the same concern, and they are now at work getting the machinery ready for sale.

It is claimed that the rolling mills now being erected at Jasper, Ala., will be the largest and best equipped in the State.

No. 2 Furnace, of the Coplay Iron Company, Limited, at Coplay, Pa., which has been undergoing repairs for some time, was put in blast last week.

Macungie Furnace, of the Macungie Iron Company, at Macungie, Pa., was blown out on Wednesday, the 27th ult., for the purpose of relining and repairs.

The plant of the Stony Creek Rolling Mill Company, Limited, at Stony Creek, Pa., which has been idle for several weeks, has gone into operation again.

The firm of Hussey, Howe & Co., Limited, steel manufacturers at Pittsburgh, will shortly be dissolved, and an incorporated organization effected. J. W. Brown, who is now secretary and treasurer of the company, will probably be made chairman of the new organization.

The Western Steel Company, of St. Louis, will, it is now definitely known, turn the Vulcan Steel Works over to their owners upon the expiration of their lease. Notice has already been given by the Western company to stop deliveries of coal on a contract calling for 210 tons a day, and not expiring until September 15th next. There is considerable talk, however, of the works being restarted by another company; two different schemes having that object in view are said to be on foot.—*Age of Steel.*

The blast furnace of the Bellaire Nail Works, of Bellaire, Ohio, produced 4350 tons of No. 1 Bessemer pig iron during last month.

For several months past the Glendon Iron Company, Easton, Pa., have been making brick from hot cinders that come from the furnace; recently the wages of the brick-makers were reduced and all of them quit work. The company notified all of their ore contractors in Williams township to stop delivering ore at the works on the 30th inst. It is thought that this means that the company have poor prospects of putting their four idle furnaces in blast.

During the month of June the blast furnace of the Belmont Nail Company, at Wheeling, W. Va., produced 3200 tons of Bessemer pig iron.

The Gogebic Furnace Company, who operated the furnace at Iron River, Mich., in 1887 and part of 1888, has blown out the furnace and given up the lease to the owners, the Iron River Furnace Company, of Fond du Lac, Wis.

The plant of the Columbia Iron and Steel Company, at Uniontown, Pa., is closed down in all departments. These

works have heretofore been operated independent of the Amalgamated Association, although paying the scale of wages demanded by that organization. Last week a committee representing the employees presented the Amalgamated scale to the firm for their signature, and, upon the refusal of the firm to sign the scale, the works were at once closed down. The proprietors state that they are in no hurry to resume operations, as their orders are about all filled and they desire to make some improvements and repairs. From present appearances it will be some time before operations are resumed.

The Scottdale Iron and Steel Company, Limited, at Scottdale, Pa., have signed the Amalgamated scale and the works are now in full operation, giving employment to about 300 men.

The Pittsburgh Steel Casting Company, of Pittsburgh, have recently signed a contract to furnish some heavy castings for the cruiser Maine, now being built by the Government at the Brooklyn Navy Yard. Among the pieces to be cast is the stern-post, which is of such an unusual shape that an examination of the pattern by the railroad officials was necessary before a safe shipment of the casting could be guaranteed. The total cost of the work will be about \$70,000.

The Lukens Rolling Mills, Coatesville, Pa., Chas. Huston & Sons, proprietors, have just put in a new set of three-high rolls, 98 x 30, in place of 84 x 25, as heretofore. They also put a new cylinder of increased size, with Corliss valve gear, to their engine, which was formerly of the slide-valve pattern. All the work is now complete and running satisfactorily. Orders are reported plenty.

In our issue of the 28th ult. we stated that Brown, Bonnell & Co., of Youngstown, Ohio, had issued a notice that upon the resumption of work after repairs all employees not members of the Amalgamated Association would be requested to accept a 10 per cent. reduction. This was an error, the notice in question reading as follows: "In accordance with the receiver's agreement to give notice of any proposed change in wages of tonnage working, notice is hereby given that a reduction in that class of wages will be asked for to take effect on the resumption of work after July 1."

Machinery.

At the annual meeting of the Swinerton Locomotive Driving-Wheel Company, held in Portland, Me., recently, the following officers were elected: Directors, Charles E. Swinerton, J. F. Merrow, Jeremiah Prescott, N. W. Rice, Boston; Frank Jones, Portsmouth; George Burnham, Jr., Portland; George P. Westcott, Portland; J. S. Ricker, Deering; J. Hopkins Smith, New York. President, Charles E. Swinerton. Clerk and treasurer, J. Hopkins Smith.

The Kansas City Foundry and Machine Company, who lately bought out the King Novelty Mfg. Company, of Independence, Mo., have now fully organized, with capital stock \$40,000 paid up; T. B. Ray, president; T. C. Bradley, vice-president and treasurer. They are now building a new brick foundry and machine shop at Manchester, a suburb of Kansas City, and expect to be in active operation by August 1st.

A special dispatch from Altoona, Pa., under date of the 6th inst., reads as follows: "For some time past rumors have been afloat in this city that the Pennsylvania Railroad Company contemplate erecting a number of new shops here. The report has been confirmed, and in a short time work will be commenced. The improvements will consist of a brick paint-

shop 135 feet wide by 480 feet long, with transfer pit. The building will be L-shape, having a capacity for 48 cars and giving employment to about 200 men. A new cabinet shop, 250 x 160 feet, will also be built. The new shops will be erected at Seventh street and Chestnut avenue. A new round-house for the use of the middle division will be built at Fourth street and Eighth avenue. This will relieve the round-house at Twelfth street, which will be converted into a workshop. The statement is made that \$285,000 has been appropriated to meet the expense assumed in the erection of various buildings. A new brick warehouse to cover two squares on Eleventh avenue will also be erected in a short time.

The Midway Machine Works have gotten snugly fixed into their new quarters in South Anniston. The cupola is going up for the foundry and will be ready in a week or so. The brass-foundry room is 50 x 70 feet. The pattern shops are located in the second story and are 30 x 100 feet in dimensions. The company make all of their patterns and do all of their own woodwork. The erecting shop is 50 x 30 feet in size. The company are just finishing a locomotive for the Hidalgo Railway Company, of Mexico.

The Secretary of State of Illinois has licensed the incorporation of the St. Louis Deadlock Brake Company, at East St. Louis, the same to have a capital stock of \$25,000. The incorporators of the company are Nathaniel T. Lane, James V. S. Barrett and A. W. Taussig.

The Kings County Boiler works, formerly of Kent avenue, Brooklyn, N. Y., have removed to the corner of West and Noble streets, same city, being now located in what was formerly known as Greenpoint. The new works, which cover about an acre of ground, are within a block of the river front, which enables them to bid successfully on steamboat jobs. C. F. Davenport is secretary of the company.

The Kilby Mfg. Company are the new corporation who have bought the property, good-will and business of the Prospect Machine and Engine Company, of Cleveland, and of Barney & Kilby, of Sandusky, Ohio. They have made extensive additions to the shops and machinery, and are prepared to do all kinds of heavy foundry and machinist work, besides building the Cummer Automatic and Newert Automatic engines.

The Phoenix Iron Works, Meadville, Pa., engine and boiler builders, use natural gas for steam making; also for blacksmith furnace and for their core oven.

Hardware.

The Freeman Wire Company, of St. Louis, hope to start up the Illinois Wire Mill, which they recently purchased, early in July. In addition to sizes adapted to barb wire manufacture, the company will make other sizes for which there is a local demand, hitherto cared for by outside manufacturers. A very considerable portion of the product will be used in the company's barb wire plant, which immediately adjoins the mill.

P. & F. Corbin, New Britain, Conn., are reported to be building an addition to their factory.

The Universal Horseshoe Machine Company, at a recent meeting, increased their capital stock from \$175,000 to \$300,000. Their buildings at Anniston have been erected, and it will not be long before they will begin operations. They are preparing to make steel blooms themselves in the event of Anniston Blooming finding it impossible to keep them fully supplied with the raw material out of which their product is made.

The Iron Age

New York, Thursday, July 12, 1888.

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JOHN S. KNEELAND, - - - BUSINESS MANAGER.

The Blast Furnaces on July 1.

The unfavorable conditions affecting the iron trade have had a further effect on the current pig iron production, the coke furnaces notably showing a falling off, in spite of the fact that Alabama has increased and is still adding to her capacity by blowing in new plants. The status of the anthracite furnaces was as follows:

Anthracite Furnaces in Blast July 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York.....	26	10	2,844	16	4,124
New Jersey.....	15	4	1,354	11	3,498
Spiegel.....	3	2	179	1	67
Pennsylvania:					
Lehigh Valley.....	46	25	9,263	21	5,347
Spiegel.....	1	1	50	0	0
Schuylkill Valley.....	36	18	5,734	18	3,658
L. Susquehanna Valley.....	23	11	4,506	12	2,702
Lebanon Valley.....	15	13	5,900	2	540
E. Susquehanna Valley.....	18	8	2,579	10	1,881
Maryland.....	4	0	0	4	462
Total.....	187	92	32,478	95	22,279

As compared with previous months these figures show as follows:

	Furnaces in blast.	Capacity per week.
July 1, 1888.....	92	32,478
June 1.....	99	32,418
May 1.....	96	31,008
April 1.....	94	30,496
March 1.....	98	28,598
February 1.....	97	29,989
January 1.....	118	38,206
December 1, 1887.....	122	39,487
November 1.....	124	40,028
October 1.....	123	39,440
September 1.....	125	38,338
August 1.....	129	37,930
July 1.....	138	40,742
June 1.....	138	44,188

In New York Charlotte went out on the 15th ult. to reline, an operation which it is expected will be finished in the beginning of September. Kirkland is about to resume, it is in fact it is not already blowing as we go to press. In New Jersey Chester is banked, leaving only Franklin, Oxford, Secaucus and Warren at work, all the others being idle. The New Jersey Zinc Company are running one stack, and the Passaic one, on spiegeleisen. In the Lehigh Valley Bethlehem has six in blast, Crane four, Glendon only one, and the Thomas Company ten. The latter company has been doing excellent work of late, the weekly output being over 3500 tons. The one furnace of the Allentown Rolling Mill Company, which was blown out for repairs some time since, is now nearly ready to resume. Then the one now running, which is about worn out, will go out, and will probably remain idle during the balance of the year, unless an improvement in the demand warrants starting up. Macungie is now idle, and it is not the intention to make repairs until indications of a better trade are manifest.

In the Schuylkill Valley both the Merion and the Elizabeth are idle and Mount

Laurel went out of blast for repairs on the 1st inst. Swede resumed operations during June. In the Upper Susquehanna Marshall went out in the middle of last month for repairs which will take four months. If the market is favorable the plant will be put in operation then. In the Lower Susquehanna Valley one of the Chickies furnaces is idle for repairs and Katherine, too, is out, to resume on about the 1st of August. No. 1 Paxton, which has been ready to blow in for a long time, remains cold, and it is doubtful even whether No. 2, now producing, will long go on running at present prices. In the Lebanon Valley Robesonia resumed on the 28th ult.

We give below the status of the coke furnaces:

Bituminous and Coke Furnaces in Blast July 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York.....	3	1	964	2	1,900
Pennsylvania:					
Pittsburgh district.....	19	15	14,555	4	2,925
Spiegel.....	1	1	341	0	0
Shenango Valley.....	20	12	9,901	8	4,169
Juniata and Conemaugh.....	21	12	5,483	9	3,320
Spiegel.....	1	0	0	1	200
Youghiogheny Valley.....	5	3	1,142	2	978
Miscellaneous.....	23	0	519	23	945
Maryland.....	2	0	0	2	320
Virginia.....	11	7	3,177	4	2,115
West Virginia.....	0	1	746	0	0
Kentucky.....	4	4	1,076	0	0
Ohio:					
Mahoning Valley.....	13	6	4,645	7	4,007
Hanging Rock.....	11	9	1,985	2	423
Hocking Valley.....	14	4	1,165	10	2,128
Central and Northern.....	17	7	5,367	10	5,144
Illinois.....	15	7	7,302	8	7,694
Missouri.....	8	2	992	6	2,740
Wisconsin.....	4	2	926	2	1,176
Indiana.....	2	1	174	1	240
Michigan.....	1	0	0	1	250
Alabama.....	18	14	7,427	4	1,964
Tennessee.....	10	9	3,800	1	540
Georgia.....	2	2	805	0	0
Colorado.....	1	1	402	0	0
Total.....	212	121	69,453	91	45,222

As compared with previous months these figures stand:

	No. of furnaces.	Capacity per week.
July 1, 1888.....	121	69,453
June 1.....	128	75,427
May 1.....	120	75,815
April 1.....	128	70,644
March 1.....	128	68,892
February 1.....	136	73,912
January 1, 1888.....	143	83,101
December 1, 1887.....	144	88,835
November 1.....	151	90,459
October 1.....	152	89,123
September 1.....	145	83,124
August 1.....	113	62,061
July 1.....	98	47,319

In New York only one of the Troy furnaces is now running. In the Shenango Valley there have been no changes during June, the same being true of the Juniata and Conemaugh districts and the Youghiogheny. Among those grouped as miscellaneous we may note that Centre Furnace is repairing, and is expected to begin work again early in August.

In the Pittsburgh district furnace D of the Edgar Thomson plant was blown in on June 30, so that all the nine furnaces of Carnegie Bros. & Co. are now at work, this firm making now more than one-half of the iron produced in Allegheny County. Edith Furnace stopped on the 16th ult. for relining, and Isabella No. 1 went out for a similar reason, to resume probably during the current month.

In Virginia Gem is likely to remain inactive until the company is reorganized. Lynchburg expects to have repairs completed by the 1st of August, and Pulaski

started in again on the 27th ult. after an idleness of less than a month. The new furnace of the Virginia Nail and Iron Works made its first cast in June. In West Virginia Belmont is now the only stack in operation, both Riverside and Top Mill furnaces being out of blast for relining.

In the Mahoning Valley Falcon was banked on the 21st ult. and Phoenix on the 26th. Anna is to blow in during the current month, after being thoroughly repaired, and Mary is also likely to resume early in August. Among the stacks of Central and Northern Ohio the noteworthy changes are the blowing out of Dover, Franklin and Zanesville. The latter was temporarily banked on the 16th ult., and later on stopped to clean out the stoves. It is to resume in two weeks. Steubenville Furnace, on the other hand, resumed during June. Belaire has already attained the record of making over 80,000 tons of pig iron on one lining, and is expected to run a year longer on it. In the Hocking Valley Crafts has just completed a new hearth and bosh, but it will only light up when prices warrant it. Gore went out on the 23d. ult. In Illinois South Chicago is running only one stack. In Missouri Jupiter went out on the 28th ult., and the only furnace of the Western Steel Company now active is expected to stop about the middle of this month. This will leave only one coke stack at work in the State. In Wisconsin the remodeled Mayville, formerly a charcoal stack, started on coke on the 28th ult.

In Alabama No. 1 Eureka resumed on the 25th, and No. 2 on the 29th ult., both having been banked since the 21st of May on account of a shortage of coke. One of the Sloss furnaces was blown in early in July. One of the new De Bardeleben furnaces, at Bessemer, made its first cast on the 13th ult., and one of the new Sheffield and Birmingham Company's stacks blew in during the month, the second following early this month. Two Ensley furnaces are now at work. Gadsden is expected to begin blowing in the middle of August. In Tennessee South Pittsburgh has two stacks out of three in operation.

The status of the charcoal furnaces was as follows:

Charcoal Furnaces in Blast July 1.

Location of furnaces.	Total number of furnaces.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New England.....	14	5	410	9	680
New York.....	10	3	572	7	563
Pennsylvania.....	23	4	285	19	755
Maryland.....	13	4	369	9	580
Virginia.....	23	5	247	18	755
West Virginia.....	3	0	0	3	165
Ohio.....	18	8	631	10	649
Kentucky.....	2	2	215	0	0
North Carolina.....	2	1	90	1	80
Tennessee.....	10	5	1,270	5	1,080
Georgia.....	2	0	0	2	114
Alabama.....	10	10	1,921	0	0
Michigan.....	23	11	3,526	14	2,215
Minnesota.....	1	0	0	1	220
Missouri.....	4	2	623	2	320
Wisconsin.....	11	4	822	7	1,070
Texas.....	1	1	178	0	0
California.....	1	0	0	1	230
Washington Ter.....	1	0	0	1	175
Oregon.....	1	0	0	1	125
Total.....	175	65	11,169	110	9,776
June 1.....	177	63	10,972	114	10,499

Among the charcoal iron enterprises we may note the following: In New England

Kent is still idle; the repairs being made are expected to be completed in September. In Virginia Beverly, Cedar Run, Foster's Falls, Reed Island and Speedwell are producing iron. In the Hanging Rock region Jefferson and Madison have blown in. In Michigan Deer Lake resumed in June, while Spring Lake stopped for repairs on June 25, with the expectation of blowing in again early in August. In Wisconsin Hinkle is out, but will soon start again. Minneapolis Furnace made 8510 tons during the first six months, in spite of constant shortage of charcoal. Otherwise the furnace would have exceeded the nominal capacity and would have come up to 65 to 70 tons a day. The Minneapolis iron is now being used alone in car-wheels, with reported satisfactory results. In Missouri Sligo is again running. In Tennessee Cumberland Furnace blew out on the 1st ult., and will not run again until railroad transportation is secured, which, it is hoped, can be obtained within a year. In Alabama Rock Run is to go out in August for 30 to 60 days to make repairs. The furnace had a 14 months' blast on one hearth. Both Shelby, both Woodstock, Tecumseh and Gadsden are producing.

Irondale Furnace, of the Puget Sound Iron Company, is to go into blast between the 15th and 20th of July, after thorough repairs, the erection of charcoal kilns, &c. It is expected that the furnace will make 40 tons of charcoal iron per day. The Oregon Iron and Steel Company, of Oswego, Ore., are building a new furnace, which will blow in early in August. It is 60 x 18, with three Whitwell stoves.

Little significance attaches to the statements of furnace capacity idle, because they naturally lump together plants so long inactive that under conditions like the present they seem to have little chance of early resumption. Until a furnace is either abandoned or dismantled it is naturally carried along in the lists, although under normal conditions it is not worthy of being considered reserve capacity. It has been thought a matter of interest to segregate these plants from those which are really on the active list, being merely out for repairs or temporarily banked. We have grouped together all the furnaces which have been idle for six months or more to show how large a capacity is practically out of the race when the markets are at or near low level. We have included furnaces held in reserve often practically as "alternate stacks," that is to say, such as are kept in readiness to enable continuous work to be done, the machinery available being only powerful enough to run one furnace.

Analysis of Idle Anthracite Furnaces.

	Out six months or more.		Temporarily idle.	
	Num-ber.	Capacity.	Num-ber.	Capacity.
New York.....	12	2,436	4	1,188
New Jersey.....	9	2,781	3	784
Pennsylvania:				
Lehigh Valley.....	15	3,210	6	2,137
Schuylkill Valley.....	14	2,314	4	1,344
Lower Susquehanna.....	9	1,921	3	781
Lebanon Valley.....	1	190	1	350
Upper Susquehanna.....	8	1,418	2	463
Maryland.....	4	462	..	....
Totals.....	72	15,232	23	7,047

It will be seen, therefore, that the furnace capacity which is likely to be made available by a moderate revival is very small indeed, while that part of it which cannot be counted upon to aid in output

unless a heavy advance takes place is relatively large. It may be stated in this connection that the latter is largely nominal since our records do not contain data which would allow us to gauge their possible make from actual output over any extended period.

Similarly the coke furnaces show the following when segregated into two groups:

Analysis of Idle Coke Furnaces.

	Out six months or more.		Idle temporarily.	
	Number.	Capacity.	Number.	Capacity.
New York.....	2	1,900	..	....
Pennsylvania:				
Pittsburgh district.....	1	350	3	2,855
Shenango Valley.....	4	12,040	4	2,129
Junata and Conemaugh.....	3	12,452	3	1,068
Yough Valley.....	10	976	..	....
Miscellaneous.....	..	..	..	945
Maryland.....	..	..	..	329
Virginia.....	1	1,461	..	684
West Virginia.....	2	362	..	1,054
Ohio, Central and Northern	4	1,828	6	3,316
Mahoning Valley.....	..	..	7	4,007
Hocking Valley.....	6	1,259	..	809
Hanging Rock.....	1	300	1	123
Illinois.....	2	2,088	4	5,606
Missouri.....	5	1,985	1	755
Wisconsin.....	2	1,176	..	..
Michigan and Indiana.....	..	..	..	490
Alabama.....	12	880	12	1,084
Tennessee.....	..	..	1	540
Total.....	46	19,784	45	25,067

It will be noted that in the case of the coke furnaces the available reserve is a far heavier proportion of the total capacity idle.

The Advance in Tin.

The statistics for the month of May were a disappointment to holders of tin and speculators for a rise, so much so that the metal was left to its own fate during the first three weeks of June, dropping all the way to £76. 5/. On June 1 the visible supply in Europe and America was 23,516 tons, as compared with 20,194 on May 1, showing an increase of 3322 tons where a decrease was expected. On July 1 the figures had radically changed, the visible supply being 20,403 tons, or 3113 tons less than the month before. On July 1, 1887, it was 16,092, and on July 1, 1886, 10,871. The deliveries more particularly attracted attention, being no less than 4268 tons in England and Holland in June, against 1999 in June last year and 1835 in June, 1886.

We perceive from our Continental exchanges that on or about June 24, when tin was at its lowest in London, the general opinion prevailed that the syndicate, after having accomplished its object of helping to depress the market, was about to come to the rescue of the downtrodden metal, a thing which has since taken place, the syndicate still being the heaviest holders, owning, it is asserted, some 16,000 tons. Considering that prior to the boom last year tin ranged in London during a twelvemonth between £90 and £100, and was not looked upon as too dear for ordinary purposes of consumption, it was evident that it must be cheap at £76. 5/, provided there was no fear that the syndicate would soon come to grief. Added to the cheapness there was the fact that, at the Straits at least, the low price was beginning to curtail production, and people in the tin trade at Singapore and Penang, especially the large Chinese traders, were thinking well of the metal and its im-

mediate future. After the tumble the Chinese were free buyers at the low prices then prevailing at Penang, and remained purchasers to ten times the amount bought for Europe and America. Besides what they bought they shipped to China their speculative holdings since the beginning of the year. While so low tin received more support from the Chinese firms in the Straits than from Europeans and Americans outside of the syndicate, and in this they have displayed their usual foresight as merchants.

The rebound, when it came, carried tin £10 higher in about a week in London, and 2 cents in New York, although it has since again receded to some extent. London predictions per cable that the syndicate is about to collapse are heeded very little on this side, because we are fully aware that they are dictated on the one hand by ill will and on the other by interested motives. Although none but the copper companies on this side are admirers of the syndicate, we are far from believing that its downfall is near at hand. We, therefore, hold that the present reaction in favor of tin is from every point of view legitimate, and likely to remain so, unless prices are again driven to extremes, as they were in January, February and March.

The Chicago Tribune selected the 4th of July for the publication of a very erroneous article on the condition of the steel trade of that locality. The article would have attracted little attention if it had appeared in an obscure paper, but the Tribune has such a high standing and circulates so widely that any statement appearing in its columns seems naturally to be at once stamped as authentic. In this article several truths are stated, but they are buried in a mass of misstatements so completely that columns would be required to correct all the false impressions conveyed. A few of the most important errors, however, ought to be pointed out. The Chicago steel men are not all going ahead and making money. The past two months and this month they have been able to run somewhat steadily through the accumulation of a number of small orders for rails for summer delivery, but they are not, as stated, "turning out more rails" this year than last. One steel rail mill is not making any rails at all and has not done so for months, but it ran all last year. The other mills have also fallen far short of last year's production up to this time. The article says that the mills "are now able to turn out steel rails at least \$5 cheaper than they could last year, consequently at \$32 per ton this year they are making just as much as they were last year at \$37." The grounds upon which this statement is made are not given, and it is rather seriously doubted, for reasons which it is unnecessary to lay before our readers who are familiar with the cost of manufacturing iron and steel. The details of quantity of material used in manufacturing a ton of steel rails are altogether wrong, but they show that the writer has been somewhat diligent in the use of such information on the subject as he could get ready made, and which he supposed gave him all that was needed. It is very distracting to Chicago manufacturers and business men, who are anxious to have their daily papers pay more attention to the business and in-

dustrial topics, to find these questions treated with such gross misunderstanding when they are taken up.

Six Months' Pig Iron Production.

We present below an estimate of the pig iron production in the United States for the first six months of the current year, based upon full, but not complete, returns. However, nearly every large producer in the United States favors us with official returns, the figures in a number of districts being the aggregates of the product of every maker, large or small.

As will be seen, the output of anthracite pig fell off heavily, a result partly due to the coal strike, but more largely to the decline in prices.

Production of Anthracite Pig Iron, Gross Tons.

	First half 1887.	Second half 1887.	First half 1888.
New York.....	103,800	90,472	77,166
New Jersey.....	95,408	58,658	46,244
Pennsylvania:			
Lehigh Valley...	334,070	311,411	250,191
Schuylkill Vall'y.	231,490	233,125	163,584
Upper Susquehanna Valley...			
Lower Susquehanna Valley...	80,010	67,388	70,993
Lebanon Vall'y	220,583	244,933	147,860
Maryland.....	7,355	9,138	776
Total.....	1,072,716	1,015,125	843,275

The figures for 1887 are the returns of the American Iron and Steel Association. It should be stated, however, that our grouping is somewhat different. We set aside the Lebanon Valley, including in it three furnaces which Mr. James M. Swank classifies with the Schuylkill Valley.

Our returns for the coke furnaces show the following:

Production of Bituminous Coal and Coke Pig, Gross tons.

	First half 1887.	Second half 1887.	First half 1888.
Pennsylvania:			
Pittsburgh district.....	833,620	468,030	321,525
Shenango Valley	157,952	307,318	184,373
Junata and Conemaugh..			144,758
Youghiogheny.	190,757	191,915	25,815
Miscellaneous...			20,841
Total Pennsylvania.....	1,173,329	967,263	697,312
New York.....	6,562	40,309	12,711
Southern States:			
Maryland.....	2,232	863	.....
Virginia.....	70,926	77,519	82,069
Georgia.....	21,441	15,206	20,859
Alabama.....	83,770	92,602	121,087
Tennessee.....	90,858	91,291	86,290
Kentucky.....	21,623	10,357	19,468
West Virginia.....	20,071	44,421	42,528
Total Southern States.....	320,021	332,191	372,310
Ohio:			
Hanging Rock...	57,723	55,211	54,026
Mahoning Valley	150,784	174,427	186,548
Hocking Valley.	30,979	24,667	41,428
Central and Northern.....	164,856	196,812	189,297
Total Ohio.....	404,342	450,117	471,299
Indiana.....	7,776	4,019	7,229
Illinois.....	224,255	271,685	262,967
Wisconsin.....	37,844	38,928	19,462
Missouri.....	39,970	47,426	46,991
Colorado.....	11,753	10,828	11,000
Grand total.....	1,743,070	2,063,766	1,901,281

The heavy outputs early in the year to a large extent will compensate for the decline in the later months, the total falling-off as compared with the second half of 1887 being only 162,000 tons. The South has gained—our figures, however, not being as complete as is desirable for Alabama, Pennsylvania has fallen off—the

Pittsburgh district chiefly, on account of the stoppage at the Edgar Thomson works. Ohio gained a little, while Illinois fell off a trifle.

Production of Charcoal Pig, Gross Tons.

	First half 1887.	Second half 1887.	First half 1888.
New England.....	17,882	16,378	13,680
New York.....	12,858	10,973	3,798
Pennsylvania.....	3,667	6,966	5,373
Maryland.....	5,704	8,094	3,851
Virginia.....	2,084	6,358	2,035
North Carolina.....	1,250	2,000	1,300
Alabama.....	40,942	42,078	39,120
Tennessee.....	15,904	25,367	27,768
Kentucky.....	622	4,915	1,344
Texas.....	1,719	2,191	2,991
Ohio.....	5,157	11,400	8,459
Michigan.....	85,219	105,426	98,731
Wisconsin.....	19,993	22,438	20,466
Missouri.....	9,637	16,448	10,969
Washington Ter....	1,416	.....	.....
Total.....	235,354	281,032	239,615

There has, therefore, been quite a notable falling off in the production of charcoal iron.

Summarizing the whole, the make of pig iron for the last six months was 2,984,177 gross tons.

Terms of Payment on Pig Iron.

A Consensus of Opinion.

Lately considerable difference of opinion has developed in one of the leading iron markets of the country over the two questions stated below. In order to ascertain how far these differences of opinion extended, and what is the practice in different sections of the country, we addressed a letter of inquiry to the leading pig iron merchants throughout the country, whose replies we append. The questions under discussion were:

1. Does four months' time on pig iron mean from date of shipment or date of receipt of the iron?

2. If cash discount is taken, is it taken from the date of the furnace shipment or from the date of the receipt of the metal?

Grouping the replies by the leading markets we have:

NEW YORK.

Warren, Wood & Co.: We understand four months' time on pig iron means four months from the time the iron arrives at the agreed point of delivery. If sold at a stated price at furnace, to date from shipment. If sold delivered on buyer's dock, to date from delivery on buyer's dock. With regard to cash discount the same rule applies—i. e., to discount from the time delivery is made as contracted, either at furnace or on buyer's dock.

Hugh W. Adams & Co.: To your first question we answer, four months' time on pig iron means to date as per terms of contract; sometimes from date of shipment from furnace; sometimes from date of shipment from tidewater, and sometimes from date of receipt of the iron at consumers' works. To your second question we answer, a cash discount would also depend upon the terms of the contract, as stated above in regard to time.

PHILADELPHIA.

L. & R. Wiater & Co.: In reply to your first question we would say that the usual custom is to sell the iron delivered to works. We consider the date of the receipt of the iron the commencement of the time sold on. Second, there is very little iron sold in the Eastern market subject to a cash discount, and the receipt of the iron is the basis of settlement.

Another leading Philadelphia firm writes: The answer to the questions you ask depends entirely under on the standing with

parties. If nothing is said about extra time, four months would be from date of shipment if made f.o.b. cars, or if sold delivered from time of receipt by consignee. Mostly 30 days are taken without interest and three months' interest added, unless sold at four months flat, when note would be dated as stated above. The same rule applies to cash payment, whether iron is sold at furnace or delivered. As a general rule customers take the date of receipt as the date for payments.

Justice Cox, Jr., & Co.: An answer to your first question, "Does four months' time on pig iron mean from date of shipment or date of receipt of the iron?" depends very much upon where the iron is shipped from. If from the South, when it takes from ten days to two weeks to arrive at its destination, notes are always dated from the reception of the iron. If it comes from near-by places notes are always dated from the date of the bill, which is always the date of shipment from the furnace. To your second question, "If cash discount is taken, is it taken from the date of the furnace shipment or from the date of the receipt of the metal?" the same rule would answer this as in reference to notes. This is our experience, and we think is the general rule.

J. Tatnall Lea & Co.: In our opinion four months' time on pig iron dates from time of shipment from furnace, if the iron is sold delivered at furnace, or if sold delivered at buyers' works, the time granted, whatever its duration might be, would naturally date from time of its receipt by buyer. This has been our universal experience in the matter referred to, and we have never even heard the question raised. As for cash accounts, they would, of course, be governed by the same rule and date from delivery of metal at agreed point of delivery, at furnace or at buyer's works, as the case might be, but we think where cash discount is contemplated it is most frequently a matter of specific agreement between seller and buyer and is not left to be determined by the application of any general rule or custom.

BALTIMORE.

R. C. Hoffmann & Co.: In both cases it would depend on the terms of sale as to delivery. If the terms be delivery at furnace, or place where the iron is at time of sale, then the note should be from date of sale or shipment, and in case of discount the same. If sold to be delivered at any point other than furnace, or where the iron is when sold, the date in both cases would be the date of receipt of the goods at that point by purchaser. We have known of cases when iron was sold, delivered at furnace, and not moved by purchasers for many months.

J. L. Hogan & Co.: say: Pig iron sold on four months' time should be paid for in four months from date of invoice, which should correspond with date of shipment. Should buyers desire to pay prompt cash, and thus avail themselves of discount, the full number of days should be allowed from date of invoice. It may be necessary to qualify the above statement to some extent. For instance, the question might be brought up whether the material was purchased upon a price f.o.b. at furnace or delivered to buyer. If the latter, we have known instances in which the date of arrival was assumed as the basis of settlement. Again, unusual delays sometimes occur in transit, and here again buyers occasionally make claims for consideration. Such cases, we consider, must be settled on their individual merits, without reference to the broad principle as stated above.

BOSTON.

C. L. Pierson & Co.: When pig iron is sold for delivery f.o.b. furnace at shipping port, then four months should, be

from date of such delivery. If the iron is sold for delivery at place of consumption or other designated distant point, then four months should be from time of arrival at such designated point, and the same rule should be applied to cash discounts.

CLEVELAND

A leading firm writes: "It is our custom to have the four months' time on pig iron date from the time of shipment from the furnace. Very frequently, however, bright purchasers insist on this being dated from the time of receipt of the iron, in which event we do not care to oppose them. However, we might say that our universal custom is to have it dated from the date of shipment from the furnace. The cash discount is treated in the same way.

Condit, Fuller & Co.: Our understanding of the point referred to is, four months' note from date of shipment from the furnace, or if cash discount is taken it is from the date of shipment, also from the furnace. We invariably require settlements in this way, although frequently customers will try to take advantage of the fact that sales are made f.o.b. at point of delivery, and construe this to mean that settlements are to date from such delivery. We invariably insist on settlements being made from date of shipment, and understand that delivery affects price and not the settlement.

A prominent firm writes: It has become almost a universal custom among sellers of Western irons to make prices delivered at the consumer's city; therefore we take it that four months' time or cash discount should be figured from the date of the arrival of the iron rather than from the date of shipment from the furnace.

CINCINNATI.

Bacon, Floto & Co.: When sales are made on time for delivery at a given point the terms date from delivery at that point, unless specially stipulated to the contrary. In order to secure terms to date from time of shipment sales should be made f.o.b. cars at furnaces, or specially stipulated if price is made away from furnace. Cash discounts will always have to be in accord with the terms of sale. In this market the usual discount is from 40 to 50 cents per ton on four months' sales, remittances to be made within 30 days of receipt or shipment, as the case may be. Prompt cash discounts are specially stipulated. The above are the present usages of this market. We have understood some agencies contending that when they make sales at points of deliveries they make it their rule to date paper from time of shipments; unless this was agreed upon mutually we think it could not be enforced.

Another Cincinnati house holds the following views: Four months' time on pig iron means four months from date of shipment, unless otherwise specified in contract. If cash discount is taken, if at specified rate per cent. per annum, it is right to calculate from date of shipment. If at specified amount per ton, discount must be taken advantage of within 15 days from date of shipment, except in cases where buyer is too far from furnace to receive the iron in 15 days from date of shipment; then 20 days may be allowed. To avoid any misunderstanding between buyer and seller we think the sale memorandums or contracts should distinctly state when papers should date and how cash discount settlement should be made, and we endeavor to cover all these points in our contracts.

PITTSBURGH.

A. H. Childs.: In this market settlements by note for pig iron sold on four months' time are understood to date from the average delivery of the metal to the buyer. If a cash discount is taken on a

sale based on four months' price it usually means 2 per cent. off the face of the bills, which may be rendered for any part of the total amount sold or after all has been delivered, just as may have been agreed upon beforehand.

Collord & McKeefrey: Four months' time on pig iron, in our judgment, means from date of shipment of the iron. Our customers usually make settlements on this basis. Cash discounts should be taken from date of the receipt of the iron.

Nimick & Co.: Unless otherwise agreed in the terms of sale, four months' time on pig iron dates from the receipt of the iron, and cash discount is taken from the date of the receipt of the metal.

CHICAGO.

Pickands, Brown & Co.: On time sales we have three methods—viz.: Four months from date of shipment from furnace or agreed point of shipment. Four months from arrival of the cars at point of delivery. Four months from delivery in the yard or at the works of the buyer. Each method is settled at the time of sale. On cash sales we have two methods—viz.: Sharp cash, which is immediately on arrival at point of destination. Cash 30 days, which is cash within 30 days of arrival at destination. In both cases a delivery at point of destination is made before payment is due unless specially agreed to contrary at the time of sale.

H. R. Durkee & Co.: Replying to your inquiry as to how our customers interpret the expression "terms four months," would say that the general practice in our trade is to regard it as meaning "freight cash; balance four months from date of delivery at place of delivery." Invoices are made out at date of shipment and sent customers as notices of shipment. When the iron is sold f.o.b. at furnaces then the date of the settlement paper coincides with the date of the invoice. When sold f.o.b. at the place of consumption, the paper is dated the day the iron arrives there. When customers buy a round lot of iron, scattered deliveries, receiving a certain number of cars per month, they usually make the paper in one piece for each month's deliveries, and date it at an average date of delivery for the month; the intention being to come as near as possible to paying for the iron four months from the date of delivery, at the place where in the contract of purchase it was agreed to be delivered.

Charles Himrod & Co.: If sold on four months' time, for delivery on cars at the furnace, the four months should begin the day it is shipped; if sold on same terms, delivered at the purchaser's place of business, the time should begin from the date of such delivery. If sold for cash, we consider it monthly settlements; all iron shipped during one month being paid for from the 10th to the 20th of the succeeding month.

The Andrews Brothers Company: We have been asked to give you our views on the terms of pig iron sales. We find some buyers here and elsewhere who insist on four months from arrival of car at destination, and say they get it and refuse to settle otherwise. To avoid any dispute over such a matter we make our quotations read about as follows: "Terms—all freights paid by consignee. Metal, four months' note or acceptance from day of shipment. Cash discount of 50 cents per gross ton on prompt receipt of metal at destination." We find a few buyers who claim that the cash discount can be taken any time in 30 days, but the great bulk of our settlements are made as per our terms given above.

Mrs. David Thomas, the widow of David Thomas, who succeeded in utilizing anthracite as a blast furnace fuel, died on the 9th inst., at the age of 94 years.

THE PIPE TRADE.

Manufacturers' Views of the Situation.

For many months the wrought-iron pipe trade has been in an exceptionally depressed condition. The causes of this deplorable state of affairs are touched upon by the writers of the following communications, who, as manufacturers, have closely watched developments.

A prominent Eastern manufacturer presents the following views:

The demand for consumption is good, and there are many quite extensive orders in the market. We think a larger quantity of iron pipe is being used than usual. The position of the wrought-iron pipe trade is simply that of overproduction. You ask, "To what extent the decline in raw material compensated the lowering of prices?" Prices first fell, and the price of raw material followed the decline. Prices, of course, fell faster than raw material, but the difference has not been great. A large business can be done in wrought-iron pipe if present prices could be accepted, but such a business would not be a decided loss. You might ask the percentage of loss, which would be difficult to give, as it would vary greatly with the economy with which business was conducted, but, we think, in no case can a loss be prevented at this time. In the year 1886 there was a period of six or eight months that the wrought-iron pipe trade showed a good profit. There is so much capital now lying idle in our country, the holders of which are very keen to employ profitably, that these few months of profit suggested the erection of a number of new mills, located in different parts of the country, mostly in the central valleys and gas districts. These mills have been completed within the past year; some of them are working, and all are in working order. All are anxious to sell their production, and the consequence is an overproduction and glut in the market. Had no new mills been built since the summer of 1885 those in operation at that time would now be transacting a reasonably profitable business, and the production from them would be more than ample to supply our home trade, with a margin for export. If all the mills at present going continue in operation, the rule, "the survival of the fittest" would sooner or later compel some to stop. The other chance for an improvement is to patiently wait until the population of the country grows up to the present capacity of the mills to manufacture pipe. The tariff has nothing whatever to do with the depression in the wrought-iron trade; it is simply overproduction, first, of wrought-iron pipe, and, secondly, of merchandise.

A second Eastern producer states his ideas on the subject:

We believe that the present depression in the iron trade took its origin from the date of the President's unwise tariff proclamation, followed up by the labor strikes, a very severe winter, late spring, and a continuation of the tariff agitation. Prices at this time are running at and below the cost of production. In our opinion, nothing is wanted to bring on a change for the better, except confidence based upon the settlement of the tariff question. It is the suspense created by the agitation of the tariff question that does all the mischief. The Mills bill or any other moderate bill would not hurt the country seriously for 30 days after it was enacted into a law. This country could even stand free trade, though we believe it would bring about a deplorable condition of the toiling millions of this country, that would be deprecated by every honest man in the land.

One of the largest works of the country takes the following position:

Concerning a comparison of the decline in raw material to the decline in the price of pipe, I would state that since January, 1887, the price of small and large pipe has declined, respectively, about 20 per cent. and 25 per cent., while the price of the iron to make these two classes of pipe has declined, respectively, about 10 per cent. and 15 per cent. The price of labor has declined from 6 per cent. to 15 per cent., according to locality. Manufacturers in the East have been able to obtain a larger consideration and co-operation from their workmen than those in the West have. About Pittsburgh the reduction in labor has not averaged over 7½ per cent. The consumption has fallen off notably in natural gas line pipe and natural gas distribution pipe. The dealers throughout the country, owing to the falling market, have bought only from hand to mouth, and the large orders usually placed by this

class of trade in the spring and early summer have not been forthcoming. The stocks, therefore, in the hands of dealers are not as great as they usually are, and, while I look upon the state of affairs as extremely distressing to a manufacturer, still I do not see anything in them to indicate a panic, unless the tariff tinkering or a reduction in the tariff, should increase the timidity on the part of all classes of buyers. Owing to this tinkering, and owing to the depressed and falling market, dealers have held off. Enterprises which were planned have been procrastinated, because every week the enterprise could be floated for 5 per cent. less money than they could the week before. This has retarded many gas plants, water-works plants, and, I believe, a good deal of building. Another thing must be borne in mind. Before the natural gas boom, which created such a demand for wrought-iron pipe, the entire business of this country was being taken care of by seven or eight active mills. There are now about 22 on the list, and, notwithstanding this large increase in number, many of the older ones largely increased their capacity. It is safe to say that there is 30 per cent. surplus pipe machinery in the United States. During the past six months there have been three failures of pipe mills, owing to loss of money, and there have been seven or eight mills shut down, owing to the inability to compete. Only those whose facilities and geographical location, and some, I am sorry to say, who are forced to run for financial reasons, are now in operation.

A Western maker writes ;

There is more real downright cussedness in the pipe business than in any line that we know of. If Congress would enact a law indicating the standard weight of pipe for use for steam, water or gas, so that when buyers receive stuff 10 to 20 per cent. light they could sue the mill producing and recover a proper rebate, it would go a long way toward preventing such foolish cutting of prices as we now see, as to-day, there being no legal standard, each mill does pretty much as it sees fit, and where necessary, in order to save themselves from loss, will cut the weight, as indicated above. Scrupulous manufacturers will not do so, and are consequently driven out of business until the market takes a turn upward again. Raw material has been reduced, say, \$2 per ton, as against a reduction of, say, \$14 per ton on 1-inch pipe (other sizes will figure about the same). The large demand a year ago was from natural gas companies. This has nearly ceased, and there is no prospect of recovery for some time to come. We know of no movement on foot to better the condition, and, from past experience, should take no stock in any offered.

From another prominent manufacturer we have the following :

The causes of the depressed condition of the pipe trade are well known to every manufacturer of the goods. No practical plan looking to a speedy improvement in the situation has, however, in our opinion any chance for serious consideration now, as such a plan would demand from each manufacturer sacrifices that some of them could not, we are satisfied, afford to make.

From another manufacturer in Pennsylvania we have the following :

There has been no decline in raw material to compensate for the low price of pipe, except a slight reduction in wages. The consumption has fallen off in gas-line pipes, as at almost all the points in the natural gas regions the pipes have been laid to the consumers' works. Of course to private houses there will be always new ones, but they will be small pipes. Some of the manufacturers of pipe think the business will revive in October, though why it should we cannot tell. There has been no plan proposed to bring about a better condition of the trade, except one—a suspension of production totally or one half until the consumption catches up with the production. The whole trouble with the pipe trade is that there is too much made and the market is glutted, and parties that have large stocks must sell at such prices as they can get in order to keep their mills running full, as, by running full, they can make pipe at a lower price. The reason for all this is that when the oil and afterward the natural gas was discovered it was necessary to convey it by pipes to the consumers and the oil and gas companies all wanted their pipe as soon as possible, and, as the make of these sizes was limited, a great many pipe manufacturers erected new mills for this large pipe, and others added more furnaces and neglected making small pipe, as gas and oil line paid them better. This made some pipe scarce and started up more mills, among which are the Continental Tube Company, Duquesne Tube Company, J. W. Friend & Co. and Pittsburgh Tube Works, all of Pittsburgh; Tyler Tube Company, of Boston; Oil City Tube Company, Oil City;

American Tube Company, of Youngstown; Warren Tube Company, Warren, Pa.; Riverside Iron Works, Wheeling, Va., and Conshohocken Tube Company, Conshohocken, Pa. Also a new mill at Reading, by the Reading Iron Works, costing over \$100,000; Haxtun Steam Heating Company, Kewanee, Ill., thus making 29 mills in the United States, when there were only 17 or 18 before. Some of these are not running at present, as pipe is selling below the cost of making, but should the price increase they would all start up in a few days and of course the price would go down again. The National Tube Works Company are said to turn out over 1000 tons of pipe a day and the Pennsylvania, Pittsburgh Tube Company, Reading, American, Morris Tasker & Co. and Allison each 500 to 1000 tons in the same time. Some of these have the natural gas and own or have an interest in the gas wells and have to pay the same price per day, whether they run or not, as the gas cannot be shut off when they are idle, but must be burned in the open air at the end of a large pipe near their works. Some of the very largest works are financially strong, while some of the others are not, and the strong ones say they will not form a combination and reduce stock, as it will only galvanize the weak ones and start them up, but prefer to freeze them out if possible, then buy them up and destroy them, as they have done before once or twice.

CORRESPONDENCE.

The Chemistry of Foundry Iron.

BETHLEHEM, July 6, 1888.

To the Editor—DEAR SIR : Mr. Meissner's interesting and valuable articles on

cerned, was at a perfect standstill. Matters have not changed very much in that respect since then, and it is difficult to see why iron founders do not avail themselves of the aid which chemistry can offer them in selecting intelligently the quality of iron best suited for the purpose desired. The fracture of pig iron is a guide to its quality, no doubt, but a very inferior and untrustworthy one. It is absolutely impossible to judge from the appearance of the fracture either the fluidity or the shrinkage of an iron. A few experts in the foundry trade may be able to judge with some degree of approximation the relative scrap carrying capacity of two irons of the same grade, and possibly also to some extent the comparative softness or "machining" quality of the resulting casting, these properties depending upon the percentage of silicon and carbon, both of which influence the color and texture of the fracture. But even such expert judges find themselves completely at sea when they are called upon to select iron for a certain purpose from brands with which they are not familiar.

The mixtures of ore used, the kind of fuel employed, as well as the temperature and strength of blast are all factors which modify the appearance and quality of the resulting pig iron in a manner that may become very perplexing to those who may depend upon the appearance of the fract-



NO. 1 PIG IRON. NATURAL SIZE.

"The Chemistry of Foundry Iron" are giving impetus to a long and sadly neglected subject. A subject which it would be profitable both to the consumer and producer to investigate. Those versed and engaged in the processes of converting pig iron into ingot metal know and appreciate the value of chemical analyses, and there is no reason why the foundry trade should not be similarly benefited by a thorough knowledge of the chemical constituents of the raw material employed. From 1880 to 1883 the writer was engaged in running a chemical laboratory in a blast furnace town in the Shenango Valley. There were ten furnace stacks in the place, five or six of which were running. So long as several of them were making Bessemer iron the laboratory was kept quite busy, but when, as it sometimes happened, all of them were running on mill or foundry iron, the chemical business, so far as analyzing pig iron was con-

cerned, was at a perfect standstill. Matters have not changed very much in that respect since then, and it is difficult to see why iron founders do not avail themselves of the aid which chemistry can offer them in selecting intelligently the quality of iron best suited for the purpose desired. The fracture of pig iron is a guide to its quality, no doubt, but a very inferior and untrustworthy one. It is absolutely impossible to judge from the appearance of the fracture either the fluidity or the shrinkage of an iron. A few experts in the foundry trade may be able to judge with some degree of approximation the relative scrap carrying capacity of two irons of the same grade, and possibly also to some extent the comparative softness or "machining" quality of the resulting casting, these properties depending upon the percentage of silicon and carbon, both of which influence the color and texture of the fracture. But even such expert judges find themselves completely at sea when they are called upon to select iron for a certain purpose from brands with which they are not familiar.

No. 2 iron indicates a probability of an inferior condition in the furnace, but does not prove such to be the case, since the grain may have been affected by slow running and excessive dampness in the pig beds.

When No. 3 iron results it is pretty certain that the temperature and perhaps other chemical conditions were insufficient for the production of No. 1 foundry iron, though possibly even in this case exceedingly slow running and very wet pig beds

may have caused a No. 1 iron in the furnace to appear a No. 3 in the pig.

Supposing the latter to be the case, the chemical difference, excepting the relation between the fixed and graphite carbon, would probably be insignificant. If such be true, would the iron be less valuable than if it had been No. 1? Would it carry less scrap? If remelted under the same conditions, would it be likely to be less fluid or have a different shrinkage? Would it be inferior in its physical properties? Careful experiments would undoubtedly prove that the grain of the fracture is not a reliable indication of quality where the grade has been modified by external causes.

The accompanying cut illustrates a piece of pig iron (if iron from a blast furnace that has not been run into a pig mold can be properly so called) in which the crystals have been developed to a degree not often reached.

This iron was produced by the Sharpsville Furnace, which at the time was running on Nos. 1 and 2 Bessemer iron, producing principally the former grade. The lining suddenly becoming damaged the furnace had to be shoveled out. In the bottom was found a flat mass of iron 6 to 8 inches thick, weighing several tons, and of this the piece illustrated is a specimen. It got the benefit of slow cooling to the fullest extent. The crystals are so large and the planes of cleavage so well defined that the mass is comparatively frail. In this specimen we have an illustration of the effect of exceedingly slow cooling.

This very iron, if—instead of cooling in the hearth of the furnace, as it did—it had been run into pig beds under ordinarily favorable circumstances, would probably have resulted in a No. 1 pig. If, however, run slowly into wet beds it might have graded a No. 2 iron, and if cast into chills it would undoubtedly have come out a close grey forge or even mottled or white.

Experience teaches and the experiments of Mr. Meissner and others prove the fact that the grain of an iron can be much improved by paying proper attention to the pig beds and the running of the iron into the same. Since the consumers of foundry iron have established the custom of grading the iron solely by the appearance of its fracture, and are willing to pay a marked difference in the price, it is but natural and quite fair for the producers to strive to develop such marks of quality. That slow cooling improves the appearance of pig iron is an established fact, but that its real quality is thereby enhanced is not so evident. The sow has uniformly an opener grain than the pig, yet it is exceedingly doubtful whether it will make a better casting. The material in and the working condition of the furnace fixes the chemical composition upon which the true quality of the product depends, and this cannot be materially changed between the tapping hole and the pig bed. The loss of carbon due to the segregation of kish is not likely to be appreciable. Kish is a very light and bulky substance—1 or 2 pounds of it floating about will make a big show in the atmosphere of a casting house. Yet 2 pounds would mean a loss of only $\frac{2}{1000}$ of 1 per cent. on a 20-ton cast. The only appreciable chemical change which is effected by the rate of cooling is the change in the relative quantities of combined and graphitic carbon, and since the relation is completely disturbed in the process of remelting it would appear that the importance of graphitic carbon in pig iron is generally much overestimated. Very respectfully,

EDWARD A. UEHLING.

Natural gas stocks have had a sudden break, due to disagreement between iron manufacturers and the gas companies.

Prices of Alloys.

LOCKPORT, N. Y., U. S. A., July 6, 1888.

To the Editor: Referring to quotations from P. W. L. Bierman, of Hanover, Germany, published in your issue July 5, we beg to submit for publication the following table, comparing German prices with those made by this company upon the same alloys. We omit aluminium brass, as Mr. Bierman does not give the composition. The prices we quote on aluminium bronze are subject to liberal discount for quantity orders. Our aluminium bronze is aluminium and pure lake copper. In reducing the measures used by Mr. Bierman to American equivalents we estimate 1 mark = 24½ cents, 1 kg. = 2½ pounds. Very respectfully yours,

DUDLEY BALDWIN, JR.,
Manager The Cowles Electric Smelting and Aluminum Company.

Prices of P. W. L. Bierman's,		Prices of Cowles E. S. & R. Co.'s.,	
per pound.	Aluminium Bronze.	per pound.	
33 9-10 cents.....	2½ per cent. Alu.....	25 cents	
44½ cents.....	5 per cent. Alu.....	33 cents	
62 36-100 cents.....	7½ per cent. Alu.....	39 cents	
74 6-10 cents.....	10 per cent. Alu.....	46 cents	
Ferro Aluminium.			
61½ cents.....	5 per cent. Alu.....		
	* 16 3-10 to 26 3-10 cents		
72¾ cents.....	10 per cent. Alu.....		
	* 31 3-10 to 51 3-10 cents		
Silicon Copper.			
61½ cents.....	3 per cent. Si.....		
	* 31½ to 46½ cents		
72 3-10 cents.....	3 to 4 per cent. Si.....		
	* 36 to 56 3-10 cents		
	* 55 6-10 to 95 6-10 cents		

The Duty on Wire Rods.

To the Editor: In recent issues of your paper have been published arguments presented to the Finance Committee of the Senate opposing any reduction of the duty on wire rods. Although these papers are most carefully and ably written, and one of them is the result of prolonged collaboration of several of the rod-makers, it is noticeable that no statements of the cost of rolling rods or the amount paid for labor appear in either of them. If the continuation of the present duty is necessary to enable the rod-makers to secure profitable returns on their investments and pay their present rate of wages, no argument could be so convincing as a presentation of a copy of their cost sheets and pay rolls. This, however, was carefully avoided. The advocate of a lower rate of duty, however, presented an affidavit made by a gentleman of long though not recent experience in rod rolling, that two years ago the cost of making rods from billets was not over \$7.50 per ton, of which \$3.10 was for labor, and that later improvements had reduced both amounts. This affidavit gave the cost in detail, and Mr. Garrett, inventor of the Garrett train now in general use, admitted its correctness as far as his knowledge extended. On this basis the cost of wire rods, based on quotations of billets in your latest issue (\$28), would be \$35.50 in Pittsburgh, against \$42.50, the price at which foreign rods can be delivered there. Viewed in another light, the cost price of American billets is \$5 per ton greater than foreign billets, if free of duty, could be delivered in Pittsburgh for; the duty on wire rods is about \$11, leaving a net benefit to rod mills by the tariff of about \$6 per ton. The total cost of labor in the process is not over \$3.10, and probably not now over \$2.60 per ton, and yet the rod mills urge an increase of about \$2.50 in the duty, which would give them a bonus of over \$8 per ton on the process of rolling alone. This is more than the entire cost of labor, fuel, interest on investments, &c., and it is about three times as

* According to size of order.

much as the total amount paid by them for wages. With full knowledge of these facts, Mr. Oliver, in behalf of the manufacturers present at the hearing, "earnestly and vigorously protested against anything less as destructive to the industry." He also stated "that the industry had a special claim on the favorable consideration of Congress." In view of the costs herein given it would seem that claim was being earnestly and thoroughly worked. In this communication it is not the writer's purpose to enter into a general discussion of the rate of duty on wire rods, or to attempt to refute all the specious arguments put forth by the advocates of higher duty, but merely to present to you and your readers indisputable facts and figures. Submitting these, let others draw their own conclusions. BARB WIRE.

Traction Increaser.—Craven's traction increaser, which is a drawbar between the locomotive and tender that automatically transfers a portion of the weight of the tender to the driving-wheels of the engine in proportion to the load which the engine is pulling, has lately been tried on the New York, Lake Erie and Western. It was first attached to No. 604, a consolidation engine with 950 pounds less on the rear drivers than on the other pairs. This engine hauled 10 per cent. more than its regular load from Hornellsville to Susquehanna, making running time. Subsequently the drawbar was attached to a 38-ton engine with four-coupled drivers 5 feet diameter, and cylinders 18 x 22. Weight on driving-wheels 48,000 pounds, 2000 pounds dead weight which had been placed on the footboard to increase the adhesion having been removed. This engine took 12½ per cent. above the regular load, and in another case 14 per cent. additional, and made a creditable performance on the round trip between the points before named, on a day when a fine mist was falling during nearly the whole trip, there not being enough rain at any time to wash the rails.

The steel steamship Harlem, built by the Detroit Dry Dock Company, at its Wyandotte yard, for the Western Transit Line, was launched on the 3d inst. The Harlem is an exact counterpart of the Hudson, built last fall for the same line. She is 304 feet over all, 38 feet 6 inches beam and molded 36 feet deep. Her cargo will be 2500 tons on 15 feet of water. The Harlem will be ready for business in two weeks from the time of launching.

At a recent meeting of the Tennessee Coal, Iron and Railroad Company, the scheme proposed by the directors was authorized. Stockholders are being asked to surrender \$1,000,000 of the \$10,000,000 common stock at 30 per cent., subscribing for preferred stock at 90 per cent.

One of the longest tunnels in the world is the one at Schemnitz, Hungary. It has a length of 10.27 miles—1 mile longer than the St. Gothard and 2½ miles more than the Mont Cenis tunnel. When the contract was made, in 1872, the work was let at about \$35 a yard, but for some years before its finish, a little while ago, the cost was about \$110 a yard.

Until recently the island of Corsica was entirely destitute of railroads. On the first of last month, however, the road from Ajaccio to Bastia, begun seven years ago by the Government, was opened for traffic as far as Corte, a distance of 45 miles. By reason of the high grades, numerous rock cuttings to be overcome, its cost has been \$33,250 per mile.

Foreign Markets.

EQUIVALENTS.

	Cents.
Franc, Peseta or Lira.....	10.3
Florin (Netherlands).....	40.2
Florin (Austria).....	35.9
Milreis (Portugal).....	\$1.08
Milreis (Brazil).....	54.6
Mark (Germany).....	23.8
Kilogram.....	220.5
Picul.....	134.

BRAZIL.

PARA. July 6, 1888.—*India Rubber*.—Our market during the week was at first irregular, with an easier tendency but later on rallied and recovered the decline in consequence of unfavorable crop news from the valley of the Amazon. Receipts at this point this month and next are, therefore, expected to be light.—*Per cable direct*.

CHILI.

VALPARAISO, May 11, 1888.—*Copper*.—Since the beginning of the month a decline took place from \$29.50 to \$28.70. At present no Copper is offering for sale except July shipments, and even about effecting any sales of the latter makers are indifferent, the trouble about the scarcity of hands and coal still being the same as before. Sales sum up for the fortnight 10,570 quintals, \$28.70 equaling £72.7/6. *Nitrate*.—A large business has been done, over 1,000,000 quintals changing hands at \$2.67½ @ \$2.80 for 95 %, and \$2.80 @ \$2.85, 96 and 1 %. Producers are at present less averse to selling futures, September-October delivery bringing as much as \$2.80 for 95 %. Refined is scarce, and \$2.90 has been refused. Our Nitrate market is at present above European parity. Sales sum up 1,166,000 quintals; \$2.80 equals 3/7½ ¢ cwt. in England.

April shipment to Europe.....	Tons.
April shipments to the United States...	52,000
Loading for Europe.....	5,500
Loading for the United States.....	32,000
Charters during the fortnight for Europe,	4,500
30,000 tons; for the United States, 3850.	

—Is sustained by a brisk demand. We quote spot Newcastle, 55/; afloat; April, 44/6; May, 41; Orrell, spot, 52/6; Australian, April sail, 40/1; May, 37/. *Exchange* has been fluctuating between 26 and 25½d., closing at 25½d., 90 days, London.—*Weber & Co.*

EAST INDIES.

SINGAPORE, July 3, 1888.—*Tin*.—June shipments to the United States from the Straits Settlements have amounted to 200 tons, as compared with 650 tons during the corresponding period of last year; to England there have been 100 tons, against 1300 tons since January 1. There were shipped to America altogether 850 tons, against 2600 tons, and to England 10,000 tons, against 6600.—*Gillilan, Wood & Co. to Chas. Nordhaus, New York, per cable.*

MANILA, July 3, 1888.—*Hemp*.—Our market during the week has been steady at \$8.50 ¢ picul, against \$7.50 same date last year, equaling £28. 15/ cost and freight, against £26. 5/. Clearance for the United States since January 1, 91,000 bales, against 123,000 last year; loading for ditto, 8000, against 6000; cleared for England since January 1, 178,000 bales, against 96,000; loading for ditto, 5000, against 19,000; cleared for all other countries, 42,000, against 20,000; receipts at all ports since last cable, 3000, against 4000; ditto since January 1, 301,000, against 232,000 bales last year and 197,000 in 1886. *Freight*, \$5.50, against \$5 in 1887. *Exchange*, 3/5½, against 3/5½.—*Ker & Co. to Charles Nordhaus, New York, per cable.*

CALCUTTA, May 26, 1888.—*Jute*.—With the exception of a few localities in the Naraingunge District, where the rainfall was excessive, the new crop is making satisfactory headway. Advances from the large area around Mymensingh are particularly favorable. Old crop Jute is now neglected by exporters, while the Bengal spinners are absorbing the first receipts of new. Prices for the latter improved 3 ¢ during the week; the stock is further reduced. Futures are tending upward, and 10,000 bales August-September shipment via canal were taken during the week.—*Times of India.*

PENANG, May 29, 1888.—*Tin*.—Receipts during the fortnight reached 5000 piculs; Europeans meanwhile only bought 500 piculs, but Chinese took 6000. After declining in the beginning from \$34.50 to \$33.90 the market recovered at the close to \$34.75, at which Chinamen have been buying. The latter also took their unsold stock and shipped it to China. There now remain unsold in Bazaar 3000 piculs.—*Schmidt, Kustermann & Co.*

AUSTRALIA.

FREMANTLE, WESTERN AUSTRALIA, May 13, 1888.—*Gold*.—Advices from the placer diggings

in the Kimberley District Gold fields are of the most encouraging kind; a large immigration is pouring in, and vessels are loading for this port at Melbourne, Sydney and Adelaide. The mines are easily accessible from King George's Sound in our immediate vicinity, and from Cambridge Gulf in the North. From the latter the distance to the placers is 200 miles and from here 350 miles.—*Argus.*

RUSSIA.

ST. PETERSBURG, June 25, 1888.—*Petroleum*.—A syndicate of capitalists at Odessa is building at present on the banks of the Danube, at Galatz and Orsova, large stationary tanks in order to ship in flat tank lighters Petroleum direct on the Danube to Austria and Southern Germany. *Steel*.—The Government is about to construct several large works in Southern Russia for the manufacture of Bessemer Steel, the casting of Guns and for extensive machine shops. *Dynamite*.—For the first time the Government has resolved to allow Dynamite to be manufactured in Russia. A concession has been granted a Swedish firm to make it.—*Journal de St. Petersburg.*

SPAIN.

BILBAO, June 23, 1888.—*Iron Ore*.—Stagnation has been intensified, the normal quotation being 7/6 @ 8/ for Campanil, and 6/10 @ 7/3 Rubios. The total shipments since January 1 amount to 1,827,669 tons, against 2,205,906 last year. *Pig Iron*.—Only coastwise shipments were made to the extent of 1272 tons.

Shipments from Spain During the first Four Months.

	1886.	1887.	1888.
Tons.	Tons.	Tons.	
Calamine.....	10,002	8,287	8,518
Pyrites.....	293,555	266,679	270,754
Iron Ore.....	1,516,336	1,822,584	1,622,628
Pig Iron.....	21,908	39,183	19,699
Precipitate.....	8,125	9,823	10,164
Quicksilver.....	465	565	614
Pig Lead.....	38,187	42,972	44,461

Totals.....1,828,573 2,190,043 1,976,838
—*Bilbao Maritimo y Comercial.*

GERMANY.

HAMBURG, June 30, 1888.—*Iron*.—The Rhenish-Westphalian Iron market has been quieter, but none the less firm, as Iron Ore remains steady. Stocks of Pig have increased 5500 tons in May which is not much. May production in Germany and Luxembourg has been 360,855 tons of Pig, against 327,282 last year. There were made 173,535 tons Forge and Spiegel, 35,361 of Bessemer; 108,248 Thomas, and 43,711 Foundry. Since January 1 the production during the first five months has been 1,756,310 tons of Pig, against 1,527,721 during the corresponding period of last year. Spiegel has been less lively latterly, and can now be had for 57 marks, 10 to 12 % Manganese. In order to be able to sell Forge Pig, not active at home, for export, it has to be shaded. Foundry Pig has been moderately active and steady. The demand for Thomas has increased perceptibly, production is now correspondingly greater, but it is extremely firm. Bessemer remains neglected. The finished Iron inquiry is slack still; dealers only buy for immediate wants. The structural branch forms an exception, notably as regards Beams; an advance seems to impend therein; it is difficult to procure any for speedy delivery. The associated Rhenish-Westphalian rolling mills received 13,000 tons orders during the past six weeks. There has been no change in Hoops. Something will have to be done to facilitate exportation. Boiler Plate makers are busy steadily; the reverse is the case with Thin Sheets, so that production has to be curtailed. Wire Rods and Wire Goods generally are dull. A satisfactory state of things is reported by foundries, machine shops and car-makers. *Metals*.—All metals have been steadily dealt in in this market and are firm. We quote: German Lead, 12.70 @ 13.20 marks ¢ 50 kg. Lake Copper, 80 @ 81, and Silesian Spelter, 16 @ 18; Zinc Gray, 20 @ 22; ditto White, 21 @ 32, and Tin Salt, 50 @ 85.—*Borsenhalle.*

A Large Terrestrial Globe.—According to *La Nature* an immense terrestrial globe, constructed on the scale of one-millionth, will be shown at the Paris Exhibition of 1889. A place will be set apart for it at the center of the Champ de Mars. The globe will measure nearly 13 m. in diameter, and will give some idea of real dimensions, since the conception of the meaning of a million is not beyond the powers of the human mind. Visitors to the exhibition will see for the first time on this globe the place really occupied by certain known spaces, such as those of great towns. Paris, for instance, will barely cover a

square centimeter. The globe will turn on its axis, and thus represent the movement of rotation of the earth. The scheme was originated by MM. T. Villard and C. Cotard, and *La Nature* says that it has been placed under the patronage of several eminent Frenchmen of science.

Lifts on Canals.

In the course of a paper on canal engineering, read by Mr. L. F. Vernon Harcourt, at the recent Conference on Canals and Inland Navigation, held at the British Society of Arts, London, the author stated that the adoption of hydraulic lifts for connecting two reaches of a canal, where the difference of level is considerable, appears to be growing in favor at the present time. The system is comparatively modern, for though a simple lift, with two counterbalancing troughs, lifted and lowered 8-ton barges a vertical distance of 46 feet on the Grand Western Canal many years ago, it was subsequently abandoned. The first hydraulic lift was erected at Anderton, in 1875, for connecting the river Weaver with the Trent and Mersey canal. The difference of level is 50½ feet; and the barges are raised or lowered in two wrought-iron troughs, 75 x 15½ feet, with 5 feet depth of water, each resting on a central hydraulic ram, 3 feet in diameter, working in two hydraulic presses underground, which can be connected at pleasure, making the troughs counterbalance one another. One trough accordingly ascends as the other descends, the motion being imparted by removing 6 inches of water from the lower trough; and only the final lift of about 4½ feet, required when the descending trough reaches the water in the lift pit, has to be effected by hydraulic power. The whole lift is accomplished in 2½ minutes, and one 100-ton barge can be transferred from the river to the canal, and another from the canal to the river, in eight minutes, with an expenditure of only 6 inches depth of water over the area of one trough, and the power required for the final short lift. A similar lift, on a somewhat larger scale, has recently been opened at Les Fontinettes near St. Omer, on the Neufossé Canal, in place of a flight of five locks, which were inadequate for the traffic. The height of lift is 43 feet, and each trough is 132½ feet by 18½ feet, containing a depth of 6½ feet of water and weighing 700 tons, and accommodates barges of 300 tons. On the Canal du Centre, in Belgium, there is a rise of 220 feet in a distance of only 5 miles, and this is to be surmounted by four hydraulic lifts similar to, but still larger than, the two just described.

In the very useful scientific methods whereby movements record themselves in curves, photography and a point moving on a smoked surface are, perhaps, those forms which yield the most delicate curves. In the French Société d'Encouragement, M. Mascart has called attention to a useful modification by M. Fénon, in which a bent tube of tempered steel forms a syphon dipping at one end in a reservoir of ink and at the other being shaped like a pen point, which is brought near the moving paper (the sloped section outward). Capillary force prevents outflow when the apparatus is at rest. A fine trace is produced by this pen, without interruption by the most rapid displacements and without sticking when at rest. M. Wolf, of the Paris Observatory, has used the system for getting records of air-pressure, temperature, wind, &c., with the best results. The reservoir needs charging only once a week, and, using inks mixed with glycerine, a single charge has been found to suffice for a barometer record of more than six months.

TRADE REPORT.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St.,
Philadelphia, Pa., July 10, 1888.

Pig Iron.—Business has been very dull since the opening of the month, but it could hardly be otherwise, considering the season and other coincident influences. There is not enough doing to determine the exact character of the market, but in the majority of cases it appears that sales cannot be made in quantity without allowing concessions of more or less importance. The consequence is that those controlling favorite brands are feeding them out in small lots at quoted rates, which, with the deliveries on old contracts, keeps the furnaces clear of accumulation. But in other directions the situation is less satisfactory. The supply is in excess of the demand, and buyers for round lots cannot be found, unless at lower figures than have hitherto prevailed. As regards Southern and Western Irons, the outlook is decidedly uncertain. The offerings are constant and liberal, but bids at figures likely to be accepted are both few and far between, so that the indications are that the Iron must be piled up at furnaces or marketed elsewhere. Which of these alternatives will be adopted, or whether a lower range of prices will be accepted, depends upon the adjustment of values in other markets. During the past few days sales of good Western Mill Irons in moderate quantities have been made at from \$15.50 to \$15.75, delivered in Philadelphia or at points near by. At these figures there seems to be a good supply, but nothing to indicate much lower prices, so that these rates are presumably about on a level with what could be realized elsewhere. Some Southern Irons, said to be equal to Pennsylvania No. 3 Mill, have been offered at \$14.50 @ \$15, ex-ship Philadelphia, but were not accepted, and as sales were not urged at lower figures it is supposed that they were about equivalent to what can be obtained at other points. Pennsylvania brands have been sold chiefly at from \$18 to \$18.50 at tide for No. 1 Foundry, \$17 to \$17.50 for No. 2, and \$15 to \$16.50 for Gray Forge, the feeling being steady on desirable brands, but a little unsettled on all others, as the supply seems to be increasing, without any corresponding increase in the demand.

Foreign Iron.—There is no demand, although inquiries for good sized lots have been made. Prices were entirely too high, however, so that nothing is likely to come of it. Asking prices for Bessemer, c.i.f., duty paid, \$19.50 @ \$20, and for 20 % Spiegel, \$26.75 @ \$27.25.

Blooms.—Business has been rather quiet during the past couple of weeks, but there is renewed inquiry for Steel, with bids at from 50¢ to \$1 per ton less than quoted rates, which are about as follows: Domestic Rail Blooms, \$28 @ \$28.50, Slabs and Billets from \$29 to \$35, f.o.b. cars at mill, according to analysis; Charcoal Blooms, \$52 @ \$54; Run-out Anthracite \$42 @ \$44; Scrap Blooms, \$34 @ \$35 per "bloom" ton of 2464 lb. Foreign at tide, c.i.f., duty paid, \$30 @ \$31 for Nail Slabs; \$31.50 @ \$32.50 for 4 x 4 Billets, and \$35 @ \$39 for Siemens-Martin, price according to analysis, &c.

Bar Iron.—The mills in this vicinity are well supplied with orders for two or three weeks to come, and are, therefore, firm in making quotations for new business. There is not much inquiry, however, and most of the business offered is in small lots, prompt delivery, for which full

prices are obtained. Large lots are not wanted unless at very low prices, and even then there is no great urgency to place orders. From present appearances it seems likely that the Pittsburgh mills will soon all be at work, hence the indifference shown by buyers, unless orders are accepted at the very inside figures made some time ago. For this reason transactions have been of a limited character, although at comparatively firm prices, say 1.85¢ @ 1 9¢ for Best Refined Bars, and 1.82½¢ for Grooved Skelp, although for good-sized lots buyers stand out for lower figures, varying from \$1 to \$2 per ton, according to the character of order, as to quantity, quality, delivery, &c.

Muck Bars.—There is very little demand, and prices are again slightly easier, although from \$27 to \$27.50, delivered, are the ordinary asking rates. Sales chiefly at the inside figure.

Plate and Tank Iron.—The Plate mills appear to be in better condition than they have been for some time, and are, in most cases, quoting from 2¢ up for Ordinary Plates. But there is not much new business offering, so that it is still an open question whether they can maintain the position they have assumed. Neither would it require much of a demand to put prices a little higher still, so that all depends on developments during the next two or three weeks. Meanwhile quotations are about as follows: Ordinary Plate, 1.95¢ @ 2¢; Tank, 2¢ @ 2.10¢; Shell, 2.4¢ @ 2.5¢; Flange, 3.5¢; Fire-Box, 4¢; Steel Plates, Tank and Ship Plate, 2.3¢ @ 2.4¢; Shell, 2.7¢; Flange, 3¢ @ 3½¢; Fire-Box, 3½¢ @ 4½¢.

Structural Iron.—There is very little new business on the market, and, from present appearances, the demand will not be of much importance until after the election. The mills have some work on hand, however, which, with the current demand for small lots, is expected to keep them fairly well employed for the present. Prices are unchanged and about as follows: 2.05¢ @ 2.10¢ for Bridge Plate; 2¢ @ 2.10¢ for Angles; 2.6¢ @ 2.7¢ for Tees, and 3.3¢ for Beams and Channels, Iron or Steel.

Sheet Iron.—There is a fair demand for Sheets, with rather more than the usual amount of inquiry for large lots, although as yet orders of this class have not been placed to any extent, as buyers are probably waiting to see how things turn out in Pittsburgh. Prices are steady and unchanged, and for small lots are quoted about as follows:

Best Refined, Nos. 26, 27 and 28... 3¼¢ @ 3½¢
Best Refined, Nos. 18 to 25... 3¢ @ 3¼¢
Common, ½¢ less than the above.
Best Bloom Sheets, Nos. 26 to 28... 4¼¢ @ 4½¢
Best Bloom Sheets, Nos. 22 to 25... 4¢ @ 4¼¢
Best Bloom Sheets, Nos. 16 to 21... 3½¢ @ 3¾¢
Blue Annealed... 2.8¢ @ 3¢
Best Bloom, Galvanized, discount... 62½¢
Common, discount... 67½¢

Merchant Steel.—Trade is very dull in this department, as is usual at this season of the year. Sales are mostly made in small lots for immediate delivery. Prices are nominally as follows: Tool Steel, 8½¢; Machinery, 2½¢ @ 3¢; Crucible Spring 4½¢; Open-Hearth Ordinary Spring, 2 9¢; Crucible Machinery, 5¢; Best Sheet Steel, 10¢; Ordinary do., 8¢.

Old Rails.—The offerings in this market are extremely light, and in most cases are held above the market. One or two lots of T Rails, amounting to nearly 2000 tons, were sold at \$21.75 delivered at mill near Philadelphia, with buyers still on the market at about \$21, Philadelphia, or its equivalent.

Steel Rails.—There is rather more inquiry for Rails, and the feeling is more hopeful than it was a few weeks ago. Sales during the first half of the year are

stated to be about 950,000 tons, with deliveries during the same time of two-thirds that amount. It is estimated that deliveries during the last half of the year will bring up the total to nearly 1,400,000 tons. Sales during the week have been chiefly on the basis of \$30 at mill, which is a firm quotation on the average run of orders.

Scrap Iron.—Dull and neglected, asking prices about as follows: \$19 @ \$20 for cargo lots; \$20 @ \$21 for carload lots, delivered, or for choice \$21.50 @ \$22; No. 2 do., \$14 @ \$15; Turnings, \$13 @ \$14; Old Steel Rails, \$19 @ \$20; Cast Scrap, \$14 @ \$15; do. Borings, \$9 @ \$10; Old Fish Plates, \$24 @ \$25. Old Car-Wheels, \$17 @ \$18, Philadelphia, or its equivalent.

Wrought-Iron Pipe.—There is nothing to note in connection with the Pipe trade. The demand for all sizes is fair, with something of a scarcity in the smaller sizes. Prices do not improve any. Discounts are quoted as follows: Black Butt-Welded, 55 %; on Galvanized do., 45 %; on Black Lap-Welded, 65 %; on Galvanized do., 55 %; on Boiler Tubes 60 %.

Nails.—The demand for Nails is limited, but the usual stoppage of the mills at this period prevents what would otherwise be a considerable accumulation of stock. Price is quoted at \$2, net, for carload lots, although sales are occasionally made at lower figures, but they are usually from mills where product is not familiar to the trade.

Chicago.

Office of *The Iron Age*, 95 and 97 Washington St.,
Chicago, July 9, 1888.

Pig Iron.—Some dealers report an increase in mail orders during the week, but otherwise the condition of business is unchanged. Local buyers are bidding lower rates than have yet been made, in the belief that the stoppage of so many rolling mills will make Iron cheaper, but they are not meeting with much success in pushing down prices. The Chicago market is now relatively lower than the other Western trade centers, and sellers are strenuously resisting a further decline, except in Ohio Softeners and Southern Coke Foundry Irons, on which a slight decline is noted. The time is now fast approaching when an important class of heavy consumers will be in the market for a year's supply, and much speculation is being indulged in as to the extent of that trade this season. The production of Lake Superior Charcoal Pig has been heavily curtailed quite recently, and sellers now feel more sanguine of their ability to prevent a further decline. Cash quotations are as follows, f.o.b. Chicago: Lake Superior Charcoal, all numbers, \$19 @ \$19.50; Alabama Car-Wheel, Nos. 1 and 2, \$25.25; do., Nos. 3 to 6, \$26.25; Southern Charcoal Foundry, No. 1, \$18; Jackson County Softeners, No. 1, \$17.50 @ \$18; Hocking Valley, Soft Foundry, No. 1, \$16.50 @ \$17.50; American Scotch (Blackband) No. 1, \$18.50 @ \$19.50; other Ohio Scotch Irons, No. 1, \$17.50 @ \$18; Lake Superior Coke, No. 1, \$17 @ \$17.50; No. 2, \$16 @ \$16.50; No. 3, \$15 @ \$15.50; Southern Coke, No. 2, \$16.75 @ \$17.25; No. 2½ and Open Bright, \$16.50; No. 3, \$15.50; No. 1 Mill, \$14.50 @ \$15.50. Attention is called by buyers to their detection of attempts by parties making very low quotations to ship Iron of an inferior grade to that which was actually contracted for. The responsibility for such a practice lies between the furnace company and their agents, but the furnace company, of course, are the sufferers when the deception becomes apparent and the confidence of buyers is lost.

Bar Iron.—Agricultural implement manufacturers are beginning to place contracts for their year's supply. Some were closed during the past week at about 1.65¢, half extras, delivered. Mill prices for early delivery are irregular, agents for mills now stopped on account of the strike quoting 1.65¢ @ 1.70¢, while others, representing non-union works, name 1.62½¢ @ 1.65¢, half extras, for Common Iron. Store prices have been advanced on account of increased rates asked by the mills, and quotations now range from 1.90¢ to 2¢, according to quantity and quality.

Structural Iron.—Some important orders for city viaducts are expected in the market soon. Prices are stiffer, owing to the stoppage of many mills. Carload lots from mill are now quoted as follows, f.o.b. Chicago: Angles, 2.15¢ Universal Plates, 2.20¢; Tees, 2.45¢; Beams, 3.40¢. Store prices are unchanged at the following rates: Angles, 2.40¢ @ 2.70¢; Tees, 2.60¢ @ 2.90¢; Beams and Channels, 3.80¢.

Plates, Tubes, &c.—A large business was done in Plates during the week, and prices are very firm at the following rates from store: Heavy Sheets, Nos. 10 to 14, 2.65¢; Tank Iron, 2.55¢; Tank Steel, 2.80¢; Shell Iron, 3¢; Shell Steel, 3.25¢; Flange Iron and Steel, 4¢; Fire-Box Steel, 4.75¢ @ 5.75¢; Boiler Rivets, 4¢ @ 4.25¢; Ulster Iron, 3.75¢; Boiler Tubes, 60 % and 10 % off on 2½-inch and larger and 62½ % off on 2-inch and smaller. It is claimed that only small lots of Tubes will be sold at these prices, as cost is not being realized.

Sheet Iron.—Mills in a position to sell for immediate or early delivery are advancing their prices, and now ask 2.95¢ for No. 27 Common, f.o.b. Chicago, some even naming 2.85¢ at mill. Inquiries are being received from buyers who would like to lay in stock if it could be had at the former rates. From store No. 27 is still quoted at 3.90¢.

Galvanized Iron.—Mill agents report a very good demand, which would make this month's sales the heaviest ever known, if it should keep up and stocks would hold out. Small lots are still quoted at 60 % and 5 % off for Juniata, and 60 % and 10 % off for Charcoal.

Merchant Steel.—Store business was very good during the week and a number of mill orders were booked, although the large consumers are not yet in the market for their next season's supply. Store prices are as follows: Bessemer Bars, 2.30¢ @ 2.50¢; Tool Steel, 8½¢ @ 9½¢; Specials, 13¢ @ 25¢; Crucible Spring, 4.40¢; Open-Hearth Spring, 2.90¢; Open-Hearth Machinery, 2.75¢ @ 3¢; Crucible Sheet Steel, 7¢ @ 11¢.

Steel Rails.—A moderate demand for small lots has been experienced by the local mills. Large orders are in sight, but they will not be placed until certain financial preliminaries are settled. For small lots, such as are now being booked, prices range from \$32 to \$32.50.

Old Rails and Wheels.—The only sale of Old Iron Rails coming to light was one of 200 tons at \$18.50. Sales of short lengths of Old Steel Rails have been made at \$13.50. A few carloads of old Car-Wheels brought \$18, but \$18.50 has been offered for more without securing them.

Scrap.—Very little is being done in this line at present. A sale of No. 1 Forge is reported at \$18, and small lots of other Scrap have been taken by consumers for immediate use. Mixed Country Scrap is probably worth about \$12, and dealers' selling quotations are about as follows, 7 ton of 2000 lb: No. 1 Forge, \$17 @ \$18; Track, \$16.50;

No. 1 Mill, \$13; Light Wrought, \$9; Horseshoes, \$16.50; Axles, \$22 @ \$23; Cast Machinery, \$12.50 @ \$13; Stove Plate, \$9.50; Cast Borings, \$8.50; Wrought Turnings, \$10; Axle Turnings, \$12; Coil Steel, \$13.50; Leaf Steel, \$14.50; Locomotive Tires, \$15.

Hardware.—A very good demand is reported for Heavy Hardware. The stoppage of Western rolling mills has stiffened the prices of many goods made of Bar Iron. Nuts, Washers and Carriage and Wagon Hardware have felt this influence and responded to it. The hope is expressed by merchants that the mills will remain closed for some time until stocks are depleted and the market is put in healthy condition. In Shelf Hardware some houses report a large trade in progress, while others find their volume of business only fair. Nails and Barb Wire are particularly dull, but Builders' Hardware is in good demand and seasonable articles are moving freely.

Nails.—A strong inclination to buy is developing among the heaviest purchasers in this vicinity, but thus far the Cut-Nail factories have refused to meet their views as to price. Along the Missouri River and at other Western points large stocks of Nails are still held, which were bought during the freight war, so that very little business is expected by the factories from that quarter for some time. The Wheeling factories are generally quoting \$1.80 at factory for Steel Nails, and insist on very favorable specifications as an inducement to shade this price, but the manufacturers of other localities are less firm in their views, and sales have been made by them at \$1.87½ here, and in some cases at even lower rates. Wire Nails are again moving more freely in the direction of large buyers, some sales of round lots having been made during the week at very low prices. Jobbers' quotations are now \$2.05 for small lots of Steel Nails, shaded according to circumstances, and \$2.50 @ \$2.60 for Wire Nails, according to quantity.

Barb Wire.—Very little business is now being done in this line, either by manufacturers or jobbers. Small lots are quoted at 3¢ for Painted, and 3.75¢ for Galvanized.

Copper.—A fair volume of business is reported by dealers at 25¢ rates, but the contrast is very marked with the exceedingly active demand at the corresponding period of last year. Copper Sheets were then called for in large quantities by cornice-makers, with whom they were displacing Galvanized Iron. High prices of Copper have restored the old conditions.

Pig Lead.—The sales of the week footed up about 500 tons of Common and Refined at 3.80¢ @ 3.90¢. A good inquiry is reported, which has imparted a firm undertone to business.

E. A. C. Du Plaine, brass founder and smelter, manufacturer of Babbitt anti-friction metals, &c., has removed from 66 South Canal street to 240 South Jefferson street, Chicago. In his new location he enjoys more extensive facilities for his increasing business, and the entire plant is arranged with a view to securing the utmost convenience in handling materials.

Detroit.

WILLIAM F. JARVIS & Co., under date of July 9, report as follows: It is rather a difficult thing to give any new features relative to the Pig Iron market that would excite any particular interest. Trade is quiet. There is large buying being done almost continually, but we have to report that figures have not yet improved to any degree, and while this has been the case for the past month, very few, if any, con-

cessions are made below the quoted prices of June 1. What was looked upon here a week ago with considerable anxiety—namely, the failure of the mills to sign the Amalgamated Scale—has passed partially, many of the larger mills having accepted the terms of the association. Shipments of Ore are being increased rapidly and large business is anticipated right up to the close of navigation. Lake Superior Charcoal Iron is moving off as rapidly as is usual at this season, when Lake rates are taken advantage of. The market is firm on a very low basis, and is fairly quotable to-day as follows:

Lake Superior Charcoal, all numbers.....	\$20.00 @ \$20.50
Lake Superior Coke, all ore.....	19.00 @ 19.50
Lake Superior Coke, cinder mixed.....	18.00 @ 18.50
Standard Ohio Black Band.....	19.00 @ 19.50
Southern No. 2.....	17.75 @ 18.25
Southern Silvery.....	17.00 @ 17.50
Southern Gray Forge.....	15.50 @ 16.00
Jackson County (Ohio) Silvery.....	18.50 @ 19.00
Old Wheels.....	19.00 @ 20.00

Cincinnati.

Office of The Iron Age, Fourth and Main Sts.,
CINCINNATI, July 9, 1888.

Pig Iron.—A more confident tone prevails in the market for Pig Iron, and during the past week there has been a fair inquiry, but the volume of actual business has been smaller. Furnaces, where they can make the delivery desired, are asking an advance of 25¢ per ton, but while buyers are more anxious to buy at previous prices they are not disposed to pay an advance. Sales of both Foundry and Forge grades have been made in moderate amounts for both present and future delivery, but there has been more irregularity than for some time past. No. 2 Foundry is reported obtainable at \$15, but \$15.50 is generally asked. No. 2 Mill is quotable at \$13 @ \$13.50, with one lot of 1000 tons selling at the outside rate. Lake Superior Charcoal Iron has met an improved demand, with sales of 100 to 1000 ton lots, mainly at \$20.50, cash. There are no new features of prominence, there being no new conditions upon which to build a change as yet. The only point of interest is that a firmer tone prevails, and that there is an evident desire to secure low-priced Iron, but no urgency to buy, consumers well understanding the advantage to be obtained for undue haste. Prices current here, cash, f.o.b., are approximately as follows:

Hot-Blast Foundry.

Southern Coke, No. 1.....	\$16.50 @ \$17.00
Southern Coke, No. 2.....	15.50 @ 16.00
Southern Coke, No. 3.....	15.00 @ 15.50
Ohio Soft Stone Coal, No. 1.....	17.00 @ 17.50
Ohio Soft Stone Coal, No. 2.....	15.00 @ 15.50
Mahoning and Shenango Valley.....	16.50 @ 17.00
Hanging Rock Charcoal, No. 1.....	20.50 @ 22.50
Hanging Rock Charcoal, No. 2.....	18.00 @ 21.00
Tennessee and Alabama Charcoal, No. 1.....	17.50 @ 18.00
Tennessee and Alabama Charcoal, No. 2.....	16.50 @ 17.50

Forge.

Strong Neutral Coke.....	13.50 @ 14.00
Mottled Neutral Coke.....	12.50 @ 13.00
No. 1 Mill Coke.....	13.50 @ 14.00
No. 2 Mill Coke.....	13.00 @ 13.50

Car-Wheel and Malleable Irons.

Southern Car-Wheel.....	20.00 @ 23.00
Hanging Rock, Cold Blast.....	22.00 @ 25.00
Lake Superior Car-Wheel and Malleable.....	21.00 @ 22.00

Manufactured Iron.—Two of the local mills have signed the scale demanded by the Amalgamated Association, but the others are yet unwilling to yield. The Iron workers, however, appear to have the best of the situation, and are confident of ultimate success. Bar Iron is reported very dull, and although the card rates are firm at 1.90¢ @ 2¢ it is reported obtainable at 1.50¢, and no doubt concessions are granted on the local product, but there is considerable irregularity. Bar and Sheet Iron—Common Bar Iron, 1.90¢ @ 2¢; Charcoal Bar Iron, 2.90¢ @ 3¢; Sheet Iron, Boiled, Nos. 10 to 27, 2.50¢ @ 3.25¢; Sheet Iron, Charcoal, Nos. 15, 25, 3½¢ @ 4½¢ per lb.

Nails.—There has been a moderate demand and an easy market at previous prices, based upon 12d @ 40d, which sell at \$2 7/8 keg, with 10¢ rebate in carload lots at mills; 50d @ 60d, 25¢; 10d, 10¢; 8d @ 9d, 25¢; 6d @ 7d, 40¢; 4d @ 5d, 60¢; 3d, \$1, and 2d \$1.50 per keg more. Steel Nails sell at \$2 and Steel Wire Nails at \$2.65 @ \$2.75 7/8 keg.

Old Material.—There has been a moderate inquiry for Old Rails \$19, but holders ask \$19 @ \$20, cash. New Rails are held at \$30, and 900 tons sold at nearly this rate. Old Wheels are neglected and nominal at \$19, spot.

Chattanooga.

Office of *The Iron Age*, Ninth and Carter Sts., CHATTANOOGA, TENN., July 9, 1888.

An event of much interest to this particular section occurred a few days since, the occasion being the opening of the Chattanooga, Rome and Carrolton Railroad from this point through Rome to Carrolton. This line nearly its entire length skirts as fine beds of Bessemer or Red Ores as are to be found in the Southern States, besides giving a fourth line directly from this point to Southern Georgia and Alabama.

Pig Iron.—There appears to be no animation nor special activity in the markets. There is one thing that producers appear to be unanimous upon, and that is the present basis of prices is as low as they will go. A few spasmodic sales may and undoubtedly will be made at cut figures, but as a general thing it is thought that prices will go no lower. For the past week the inquiries for Foundry Irons here have been on the increase, and there appears to be a growing disposition in consumers to make long contracts, based on present prices, and quite a number have been made. The fact is that all along there has not been a surplus of good Foundry Irons, and all of the old furnaces have had no trouble in disposing of their output at regular prices. It is true that many of the stacks are "sold ahead," and are not worrying about the near future, while the old stacks are also keeping their desirable stocks well in hand. Of course the new plants are feeling around in every direction for a market, and in order to get in sometimes make concessions, but taking everything into consideration the feeling that prevails is quite noticeable on the better side. There has been quite a perceptible increase in the demand for Pipe Irons, and some quite large sales have been made, but at low prices.

Miscellaneous.—Strange as the statement may appear, there are new companies forming by wealthy parties for the construction of at least three more furnaces in the Southern district—one at this place and two near Birmingham. Of the one at this place there is but little doubt of its consummation, as the conditions that prevail in the organization are peculiarly favorable to its materialization. It will be of the most modern type and located but a short distance from this place. Among the different manufacturers there is no complaint of any lack of orders, and all are running full. The Chattanooga Wooden Pulley Company have their works now fully completed, and are running with a full force of hands with plenty of orders.

Louisville.

LOUISVILLE, KY., July 9, 1888.

Pig Iron.—There has been no change in the market from last week, although a few good-sized orders have been taken. There is a disposition to make purchases for long deliveries, in some instances to run for 12 months. This desire to contract for a year's supply meets with favor

from a few furnaces, but the majority prefer not to sell longer than to January 1. If the views of parties desiring to buy largely for future delivery meet with favor on the part of furnacemen, the heavy sales will give steadiness to the market and will, it is thought, advance prices for immediate wants. There is a scarcity of Foundry grades, and though price is about the same as last week, for immediate delivery buyers are willing to offer 25¢ 7/8 ton more money. The rolling mills hope that the question between them and the Amalgamated Association will soon be settled and as there is some chance of this being done, it is hoped the market will be benefited.

Southern Coke, No. 1 Foundry...	\$16.00 @	\$17.00
" " No. 2 " "	15.00 @	16.00
" " No. 3 1/2 " "	14.50 @	15.00
Hanging Rock Coke, No. 1 Foundry...	16.50 @	17.00
Hanging Rock Charcoal, No. 1 Foundry...	20.25 @	22.25
Southern Charcoal, No. 1 Foundry...	17.25 @	17.75
Silver Gray, different grades...	13.25 @	14.25
Southern Coke, No. 1 Mill, Neutral...	12.75 @	13.75
" " No. 2 " "	12.25 @	13.25
" " No. 1 " Cold Short...	12.25 @	13.25
Southern Charcoal, No. 1 Mill...	13.25 @	14.75
White and Mottled, different grades...	12.00 @	12.50
Southern Car-Wheel, standard brands...	21.50 @	24.50
Southern Car-Wheel other brands...	18.50 @	20.50
Hanging Rock, Cold Blast...	22.50 @	24.50
Hanging Rock, Warm Blast...	18.50 @	19.50

Cleveland.

CLEVELAND, July 9, 1888.

Iron Ore.—The shipments from upper lake ports since the opening of navigation aggregate 1,275,000 tons, against about 1,350,000 tons shipped up to a corresponding period last year. Vessel rates are still growing more and more favorable to the shippers. The Escanaba rate is now 85¢, while charters can be obtained from Ashland at \$1.15 and from Marquette at \$1.10. The strike at Pittsburgh and in other Iron centers has interfered perceptibly with the active buying movement noted one week ago. The same influences will probably be felt this week, but if the labor troubles, in which Ore purchasers are so directly interested, are adjusted quickly there are excellent prospects for a fair ending to a season which started out poorly. Considerable Gogebic Ore has been sold during the past week—one 25,000-ton lot for far Eastern delivery bringing a price equivalent to \$4.70 f.o.b. vessels Cleveland. Additional sales of non-Bessemer Hematites are reported at \$3.50 and very fair grades of non-Bessemer Menominee Ores have been bought for \$3.70 @ \$3.85 7/8 ton. The following are the quotations:

No. 1 Specular and Magnetic Ores, Bessemer quality...	\$5.75 @	6.00
No. 1 Specular and Magnetic Ores, Non-Bessemer quality...	5.00 @	5.25
Red Hematite Ores, Bessemer quality...	4.75 @	5.00
Red Hematite Ores, Non-Bessemer quality...	3.50 @	4.00
Menominee Range Ores, Bessemer quality...	4.80 @	5.00
Menominee Range Ores, Non-Bessemer quality...	3.70 @	4.00
Gogebic Range Ores, Bessemer quality...	4.50 @	5.00

Pig Iron.—The favorable outlook noticed last week has continued and the tone of the market has strengthened materially. Liberal transactions are reported, both for Irons for immediate use and for future delivery. The amounts disposed of during the past week have given the Pig-Iron market the best showing it has had for three months. Offers of Iron, not quite standard, at very low prices, have been withdrawn and stocks of all kinds are more firmly held. Dealers are to-day talking of declining orders for certain kinds of Iron, the heavy demands of the past ten days having gone a long way toward clearing up production. No. 1 strong Foundry Bessemer Iron is in the best demand at \$17.50 @ \$18.25. No. 1 American Scotch is quoted at \$17.50 @ \$18; No. 1 Soft Silvery, \$17.50 @ \$18.50 and

Lake Superior Charcoals, all numbers \$20.50 @ \$21.50.

Old Rails.—A sale or two of Old American at \$20.50 comprises the business done during the week. Old Wheels are worth \$19.50.

Nails.—Steel Nails, at \$2.60 7/8 keg, have sold freely. No change in the quotations for Iron and Steel Nails.

Pittsburgh.

Office of *The Iron Age*, 77 Fourth avenue, PITTSBURGH, PA., July 10, 1888.

As regards the Iron lockout the outlook is more favorable for the Iron-workers than the manufacturers. A number of firms here and elsewhere have signed the scale as presented by the Amalgamated Association during the past week and it is expected that others will do likewise before long or as soon as they get their mills repaired and ready for business. Quite a number of firms—and some of them the larger ones—are still holding out.

The outlook for fall trade is improving. Reports from nearly all sections indicate good crops and this is encouraging.

Pig Iron.—The dullness noted for some times past continues, but the prospect for an increased demand is better than it was a week ago, for the reason that several firms have signed the scale and either started up or will do so within a few days; moreover, it is probable that as soon as necessary repairs to mills are made other firms will sign and start up. However, trade in Pig Iron at present is very dull, and to furnacemen prices are exceedingly unsatisfactory; some furnaces have blown out and others will do so as soon as they have worked up their stock of raw material. Consumers not only here, but throughout the entire district, are very low in stock, and as soon as the mills are started up they will be obliged to replenish. Prices as compared with those of a week ago remain unchanged, as follows:

Neutral Gray Forge...	\$14.00 @	\$14.50, 4 mos.
All Ore Mill...	15.00 @	15.50 "
White and Mottled...	13.50 @	14.00 "
No. 1 Foundry...	16.50 @	16.75 "
No. 2 Foundry...	15.75 @	16.00 "
No. 3 Foundry...	14.75 @	15.00 "
Charcoal Foundry...	22.00 @	24.00 "
Cold Blast Charcoal...	25.00 @	28.00 "
Bessemer...	17.00 @	17.50 "

Bessemer Iron continues to hold at the recent advance; sale of 1000 tons reported at \$17.25, cash. There is an evident intention on the part of some one here to bear the market for Bessemer by making a report of sales at \$16.50, cash, which is from 50¢ to 75¢ below the ideas of furnacemen, and, so far as we can learn, no reliable sales have been reported below our quotations.

Muck Bar.—But very little doing; buyers are scarce and sellers are not very numerous, even at present prices, \$26 @ \$26.50, cash.

Manufactured Iron.—The demand for all kinds of Merchant Iron continues light, and that for specialties is nothing to brag of; however, trade is nearly always rather quiet at this particular time, and there will doubtless be an improvement before the close of the present month. Prices remain unchanged, but to manufacturers unsatisfactory; Bars, \$1.70 @ \$1.80; Plates, \$2.10 @ \$2.20; No. 24 Sheet, \$2.70 @ \$2.80, all 60 days, 2 % off for cash. There is nothing like the demand for Skelp Iron there was a year ago, when some of the mills had all they could do.

Nails.—The demand continues light, and, while it is hoped that there will soon be a change for the better, the outlook is not as encouraging as it might be. Manufacturers report orders scarce, and that even at full card rates the margin for profit is small. Prices are still quoted upon a basis of \$1.90 for 12d to 40d

in carlots and upward, 60 days, 2% off for cash. It looks as if the Nail trade would soon be a thing of the past so far at least as regards Pittsburgh; some manufacturers have abandoned it altogether.

Wrought-Iron Pipe.—This important branch of the Iron trade continues in a depressed and unsatisfactory condition; orders continue few and far between, and some of the mills have been shut down for several weeks. The great trouble is that but little is being done in the way of oil and natural gas development, and there is but comparatively little Pipe wanted in consequence. What makes it still worse is that in addition to a very materially reduced demand the capacity for making Pipe has been materially increased within the past two years.

Old Rails.—Continue dull, but, with a good supply and light offerings, there has been no further change in prices. We continue to quote American at \$21 @ \$21.50, with a sale of 500 tons reported at \$21.25. There has not been a sale of Foreign Rails reported in this market for several months, having been supplanted by American, which, in addition to being cheaper, have the preference at the same price.

Steel Rails.—There have been no sales reported here recently. Former prices are still quoted by manufacturers, but the probability is that desirable orders can be placed for less.

Billets, &c.—There is a fair business being done in Bessemer Steel Billets, with but little change recently in prices. Sales of some 6000 tons reported at \$28 @ \$28.25, cash, delivered at buyers' works. We can also report a sale of Sheet Blooms at \$29, delivered. There was a sale of 1000 tons domestic Rail Ends on private terms, understood to be considerably below \$17. American Steel Wire Rods are quoted at \$41.50 @ \$42.50.

Merchant Steel.—There are no new features to note; business continues light, while prices remain unchanged. Best brands of Tool Steel, 8¢; Crucible Spring, 4½¢; Crucible Machinery, 5¢; Open-Hearth Machinery, 2½¢. The Steel mill of Singer, Nimick & Co. has been started up non-union.

Railway Track Supplies.—The demand for everything in this line continues light for the season, and desirable orders could probably be placed at prices below our quotations. Spikes, \$2 @ \$2.10, 30 days, delivered; Splice Bars, \$1.80 @ \$1.90; Track Bolts, \$2.85 with Square and \$2.95 with Hexagon Nuts. The mills here making a specialty of these report business as having been dull all this year.

Old Material.—There is no improvement in demand, and prices are weak and drooping. There is but little doing, and it is difficult to give reliable quotations in consequence. We quote nominally at \$19 @ \$20, net ton, for No. 1 Wrought Scrap; \$12 @ \$13 for Wrought Turnings; \$23 @ \$24 for Car Axles; \$11 @ \$12 for Cast Borings, gross ton; Cast Scrap, \$14.50 @ \$15, gross.

New York.

Office of *The Iron Age*, 66 and 68 Duane St., New York, July 11, 1888.

American Pig.—As is natural immediately after the opening of July, business has been exceedingly dull during the past week, only moderate transactions being reported at fairly steady prices. There is considerable pressure to sell Mill Irons suitable for puddling, a northern Gray Forge having been offered for this purpose at \$14.60, at tidewater, the river freight probably being exceptionally low. Gray Forge for foundry purposes is not, how-

ever, available at such a figure. We quote for standard and choice Northern Irons, tidewater delivery, \$17.50 @ \$18.50 for No. 1 Foundry, \$16.50 @ \$17.50 for No. 2 Foundry and \$14.75 @ \$16 for Gray Forge. A good many foundries stop for repairs for a few weeks early in July, and the current consumption is therefore probably lighter than usual.

Scotch Pig.—The market is very dull, and we quote, nominally, Coltness, \$19.75 @ \$20; Summerlee, \$19.50 @ \$19.75; Langloan, \$19 @ \$19.50, and Dalmellington, \$18 @ \$18.50.

Spiegeleisen.—We can report the sale of 5000 tons of English 20% at the range of \$27 @ \$27.25 to an Eastern mill.

Bar Iron.—The market is quiet, and we continue our quotations for carload lots on dock, half extras, Common Iron, 1.6¢ @ 1.65¢; Medium, 1.65¢ @ 1.7¢, and Refined, 1.75¢ @ 1.8¢.

Structural Iron.—No transactions of any magnitude have been placed lately in this market, and there are none of any size in sight. We quote: Bridge Plates, 1.9¢ @ 2¢; Universal Mill Plates, 2¢, delivered; Angles, 2¢ @ 2.2¢; Tees, 2.5¢ @ 2.7¢, and Channels and Beams, 3.3¢, on dock.

Plates.—We quote: Tank, 1.9¢ @ 2¢; Shell, 2.15¢ @ 2.30¢; Steel Tank, 2.4¢ @ 2.15¢; Shell, 2.15¢ @ 2.25¢; Flange, 2.6¢ @ 2.75¢, and Fire-Box, 3¢ @ 3.25¢.

Steel Rails.—The market is exceedingly dull, no transactions of any magnitude whatever having been reported. We continue to quote, nominally, \$30 for moderate lots at Eastern mill. In the West apparently very little business has been done during the past week. The meeting of the Rail Makers' Association is to be held at Long Branch on Thursday, August 2.

Wire Rods.—We continue to quote, with little business transacted, \$40 @ \$40.50 at tidewater. It is reported that one of the leading importers of Wire Rods has, during the past month, purchased considerable American Rods in the West to fill contracts with Western consumers.

Old Rails.—Practically no business has been reported, a few small lots, spot and Sound ports, being offered at \$20 @ \$20.50 for T's, with no demand.

Fastenings.—The market is very dull, with Spikes at \$2 @ \$2.05, delivered, and Angle Bars, 1.85¢ @ 1.9¢, delivered.

Metal Market.

Copper.—Steadiness has characterized the London market since our last week's report, and a rising tendency our own. In London on Thursday of last week Spot Chili Bars opened at £81. 2/6, and futures at £78, closing yesterday at £81 and £78 respectively, sales aggregating 350 tons, while here it at first appeared as though the syndicate were manipulating the market preparatory to effecting another sale to manufacturers, but the stiffening tendency gained strength later on by the covering of shorts, alarmed by the meager offerings. A couple of hundred thousand pounds were thus sold, comprising 25,000 lb November at 16.40¢; 25,000 lb December at 16.25¢, and January at 16¢; 75,000 lb at 16.90¢ July; 16.90¢ September, and 16.30¢ December, and closing yesterday with 100,000 lb July at 16.85¢. London cables steadiness to-day at £81, spot, and £78, three months. Best Selected rose from £75. 10/ to £76. Our market closes dull, but firm to-day with sales of 500,000 lb September at 16.60¢. During the first 11 months of the fiscal year there were shipped from the United States 22,504,785 lb of Ingot Copper, against 17,240,296 lb the year before.

The work of unwatering the Calumet and Hecla Company's mine is now progressing quite satisfactorily. The trouble with them was due to the water in the mine being too hot to condense the steam of the Worthington condensing pumps rapidly enough, but these are now doing good work. On the Paris Stock Exchange Rio Tinto shares rose toward the close of last week 7½ francs. The predictions from London that the French Copper syndicate is on the eve of collapsing for financial reasons were taken no notice of on this side, as in England the metal trade has been inimical to the syndicate all along. Spanish exportation of Pyrites the first four months has been 270,754 tons, against 266,679 in 1887 and 233,555 in 1886; of Precipitate 10,164 tons, against 9823 and 8125.

Tin.—The favorable statistics of the close of last month have had the effect of developing a strong upward movement during the week, winding up with a recoil. On Thursday last London opened at £84. 10/, spot, and £84. 15/, futures, advancing the next day to £86 and £86. 17/ respectively, but receding to £82. 10/ and £83 yesterday, the total sales summing up 1150 tons. Here the market followed closely, the sales made in succession being 20 tons spot at 18.85¢; 10 tons July at 18.90¢; 40 tons at 19¢ for spot and 19¢ July; 20 tons August at 18.60¢ @ 18.65¢, and yesterday 60 tons at 18.20¢ for July, 18.10¢ @ 18.25¢ for August, and 18.05¢ for September. This morning London again gives way slightly, to £81. 5/ spot and £82 futures, while our own market closes unsettled, with a sale of 10 tons August at 18¢. The import of Tin into the United States during the first 11 months of the fiscal year has been 29,131,506 lb, against 28,584,560 lb in 1887. The June shipments from the Straits to this country were 200 tons, against 650, June, 1887; to England 1000, against 1200. Since January 1 they were respectively 850 tons, against 2600, and 10,000, against 6600. **Tin Plates.**—The rise in Tin brought more business by bringing in parties who were ready to operate before it took place, and considerably more was done in futures. The spot market remains unaltered; stocks are low, but the demand is light. The import of Tin Plates into the United States during the first 11 months of the fiscal year has been 573,543,195 lb, against 512,251,317 during the corresponding period of the previous year. We quote at the close, large lines, on the spot: Siemens-Martin Steel, Charcoal finish, \$5 @ \$5.25; ditto Coke finish, \$4.80; Terns, \$4.30 @ \$4.40; Bessemer Cokes, \$4.50 @ \$4.60, and Wasters, \$4.35 @ \$4.40. Coke Tins are selling at 13/ in Liverpool, for prompt delivery.

The London *Mining Journal*, in its issue of June 30, remarks: "After a long and weary struggle during the period of inflated prices of Tin, it is gratifying to note that this industry has not only recovered its normal position, but that there is a marked improvement in the trade both as regards volume and prices. The exports last year were the largest on record, but for the first five months of this year in comparison with the same period of 1887, as shown by the Board of Trade returns, there has been an increase of 6%. The increases are most marked in the exports to Germany and to the United States. The latter country is by far our best customer, taking 76% of the exports and over 52% of the total make of this country. The relative improvement in prices is shown by comparison with those current early in the autumn of last year, when uninfluenced by the Tin question. Thus it may be noted that the price of Bessemer Steel Coke Plates, which is one of the brands in most active demand, was in September officially quoted at 13/ @ 13/3 box of IC, and Straits Tin at

an average of about £102 per ton. The present quotation for Plates is the same, with foreign Tin at about £82. This difference in Tin would mean nearly 6d. per box intrinsic value. The improvement is to be accounted for by the active demand which has naturally followed the period of high prices and stagnation, and by the advantages which makers are reaping by direct shipments from Swansea, the home of the industry. It is somewhat to be regretted, however, that the revival has been followed, even in this brief space, by signs which threaten the trade with its ever-recurring evil of overproduction. Already we hear of the erection of new mills and of extensive additions to existing works.

Lead.—About 1000 tons Common Domestic were sold during the week in the open market at 4¢ @ 4.10¢, but the price at the close is 4.05¢ flat, there being sellers, but no buyers at this. At the Metal Exchange some 565 tons were sold since last Thursday at the following prices: July, 4.07½¢ @ 4.10¢, and August at 4.12½¢, closing at 4¢ @ 4.05¢. In Europe, meanwhile, there have been advancing markets under rumors that the syndicate to be formed is in a fair way of constituting itself, yet not much reliance is placed on these rumors on this side. Stolberg and the other German companies apprehend a thorn in their sides from the two Lead refineries going into operation at Antwerp, and try to get up a syndicate in which the Belgians are to become members in order to counteract or prevent the competition they fear at the latter's hands. This is about all, and the outlook is extremely dim; but the London operators, who will catch at a straw, dive in and raise the price £1 per ton, Soft Spanish coming £13 and English Pig £13/5. Both Chicago and St. Louis have been firm at 3.85¢. The export of Pig Lead from Spain during the first four months has been 44,461 tons, against same time last year 42,972, and 38,187 in 1886.

Spelter and Zinc.—Only a moderate demand has been noticeable on the spot at 4½¢, Common Domestic, while Silesian may be quoted 5¢ @ 5½¢, having improved in London during the week from £14. 15/ to £15. 15/.

Antimony.—Hallett gave way in London from £40 to £39, and is selling moderately here at 10¢ to 10½¢, while Cookson remains steady at 13½ @ 13½¢.

New York Metal Exchange.

The following sales are reported:

THURSDAY, July 5.	
32 tons Lead, July.....	4.10¢
20 tons Tin, spot.....	18.85¢
10 tons Tin, July.....	18.90¢
25,000 lb Copper, November.....	16.40¢
100 tons Lead, July.....	4.07½¢
FRIDAY, July 6.	
30 tons Tin, spot.....	19.00¢
16 tons Lead, July.....	4.10¢
10 tons Tin, July.....	19.00¢
25,000 lb Copper, December.....	16.25¢
25,000 lb Copper, January.....	16.10¢
160 tons Lead, August.....	4.12½¢
100 tons Lead, July.....	4.05¢
16 tons Lead, spot.....	4.05¢
10 tons Lead, July.....	4.05¢
50 tons Lead, July.....	4.06¢
16 tons Lead, July.....	4.06¢
16 tons Lead, July.....	4.07½¢
116 tons Lead, August.....	4.10¢
MONDAY, July 9.	
25,000 lb Copper, July.....	16.90¢
25,000 lb Copper, December.....	16.30¢
10 tons Tin, August.....	18.65¢
10 tons Tin, August.....	18.60¢
25,000 lb Copper, September.....	16.60¢
TUESDAY, July 10.	
10 tons Tin, July.....	18.20¢
30 tons Tin, August.....	18.20¢
10 tons Tin, August.....	18.25¢
100,000 lb Copper, July.....	16.85¢
10 tons Tin, August.....	18.10¢
10 tons Tin, September.....	18.05¢
WEDNESDAY, July 11.	
50,000 lb Lake Copper, September.....	16.60¢
10 tons Tin, August.....	18.00¢

Coal Market.

There is comparatively little new business offering, but there is more doing in the way of delivery on former orders, and a perceptible renewal of inquiry with reference to laying in future supplies. The wholesale operators are evidently anticipating an increased demand at an early date, production at the mines having been pushed with unwonted vigor during the last few days. The Lehigh region suddenly increased its output from 87,000 tons to 172,000 tons, and the Lackawanna from 292,000 tons in the previous week to 348,000, and this despite the Fourth of July interruption. This looks like confidence in the situation, not only in regard to future consumption, but as regards ability to maintain prices. It is understood that prices now realized approximate more closely to the schedule, and there is full reason for the belief that the proposed advance on or about July 15 will take effect. According to report the advance will be 10¢ on Broken, 15¢ on Egg and 25¢ on Stove and Chestnut, or about an average of 15¢ @ 20¢ per ton. The question will be finally decided on Friday. The Philadelphia Ledger says: "Within the past week the movement of Coal eastward has been accelerated by the increased supply of vessels, and the demand from that quarter is daily improving. The Boston market is reported as much brighter and the demand for Coal increasing. The stocks of Anthracite at tidewater shipping points are beginning to decrease. A few weeks ago there was in stock at Port Richmond about 180,000 tons of all sizes of Anthracite belonging to the Reading Company, and besides the individual operators had stored there 40,000 tons additional, making altogether 220,000 tons. This unusually large stock at that shipping point has already been heavily reduced, as the total stock at Port Richmond on Saturday was reported at less than 175,000 tons. Reading Pea is in full supply at \$2.50, f.o.b.; can buy Pea as low as \$2.40; Buckshot, \$2 @ \$2.10, f.o.b.

The Anthracite Coal production during the week ended July 7 amounted to 671,382 tons, as compared with 573,572 tons for the same week last year, and for the year 1888 to date the aggregate is 16,969,701 tons, as against 17,195,144 tons for the same time in 1887, a decrease of 225,000 tons. Compared with the previous week the increase is 146,619 tons. Quotations are as follows: Wyoming Free Burning, f.o.b. at South Amboy and Weehawken, Broken or Grate, \$3.75; Egg, \$4; Stove and Chestnut, \$4.25; Reading Hard White Ash, at Port Elizabeth, Lump and Steamboat, \$4.25; Broken, \$4; Egg, \$4.10; Stove, \$4.25; Chestnut, \$4.15; Pea, \$3. Free burning White Ash is the same, except Broken, \$3.75, and Egg, \$4. Lehigh Coals are: For Lump, \$4.50 Broken, \$4.20; Egg, Stove and Chestnut, \$4.10 per ton, f.o.b. at the loading ports.

The Bituminous trade is active on old orders. Very few orders have been booked this month.

Financial.

The conviction is becoming more general that business throughout the country is in better shape and in larger volume, taken as a whole, than common report has represented. The depression of which croakers are prone to speak is, with a few notable exceptions, found in speculative articles on the Stock Exchange and among those whose commodities for the most part have only an imaginary existence. Well grounded confidence is felt in abundant crops, of which the assurance is stronger every day. Apprehension of money troubles is for the present dismissed, and al-

though the railroad situation is demoralized by the cutting of rates there are incidental advantages from which the mercantile classes are sure to profit. The wages question, particularly among iron operatives, is a serious drawback. Yet there is a feeling that pending difficulties must soon be adjusted, and that an active fall trade will open in due time. With reference to business prospects President Chauncey M. Depew, of the New York Central, is reported as saying: "I certainly think that business this fall will be very brisk. Indications all point to improving prosperity. You can safely say that the trouble growing out of concessions on dressed beef and live cattle rates has been grossly exaggerated. * * * I feel hopeful because I am convinced that general business is on the mend."

The general markets are quiet. Wheat, after a further advance, is again easier, exporters buying moderately. Corn was offered lower on spot stock. The provision market was disturbed by reports from Europe of the prosecution of owners and manufacturers of lard for alleged adulteration. In cotton there is a desire to sell in prospect of the new crop. The first bale of new crop Georgia cotton was from Albany, Ga., 5th inst., to this city. This is some days ahead in any previous year for the first shipment from that State. Crop accounts generally are encouraging despite meteorological extremes in various sections of an extraordinary character—a snow storm in Minnesota and 120° temperature in Illinois. Harvesting of wheat is in progress as far north as Ohio, Indiana and Michigan. Vice-President Clark, of the Missouri Pacific Railroad, telegraphs from St. Louis that the crops along the entire length of the Missouri Pacific system are of the most promising character, and that the yield of all kinds of produce will be enormous. In Kansas particularly the producers are sanguine of harvesting the largest crops ever gathered in that State. Officials of the Manitoba say that their crop advices continue very favorable from all sections. Vice-President Oakes, of the Northern Pacific, telegraphs that the crop prospects along his road are the finest ever known on the line.

The weekly statement of the Associated Banks showed a further decrease of \$2,500,425 in excess of reserve, which is now \$24,316,800; at the corresponding time in 1887 the excess was only \$6,352,450. Specie showed an increase of \$272,600, legal tenders decreased \$1,378,000. In loans there was a further expansion of \$3,390,900. Deposits increased \$5,580,100.

The exports of specie during the week were \$343,000, but Wednesday's steamer takes out \$1,000,000 in addition to Germany on a special order. Since January the exports amount to \$21,039,000, or about double those of the corresponding period last year.

Up to date the Secretary of the Treasury has purchased under the April circular \$18,452,400 4% and \$3,393,550 4½% bonds. These bonds cost the Government \$32,474,458, but the saving to the Government over what it would have cost to redeem them at maturity aggregates \$9,892,335.

The changes that have occurred in money circulation during the year are much less than are commonly supposed. Of the coin issues gold has increased by more than \$15,000,000, and silver, standard dollars and fractional, has increased by \$3,000,000. Of the paper issues United States notes have decreased by \$18,000,000, and national bank notes by \$31,500,000; while silver certificates have increased by \$58,000,000 and gold certificates by \$28,500,000. Thus the coin circulation of all kinds has been expanded by \$18,000,000 and the note circulation by \$37,000,000.

According to the Treasurer's report there were more gold certificates in circulation on June 30 than there has been at the end of any month since September, 1885, the amount being 119,887,370. The silver certificates in circulation on that day amounted to \$200,387,376, the highest figure ever reached. The coinage of the Bland silver dollar has reached nearly \$300,000,000, the exact figures being \$299,424,790. Of these only \$55,545,303 were in circulation on June 30, which is a trifle more than were in circulation at the end of the fiscal year 1886-87.

The imports of merchandise at this port are again heavier, the total for the week being valued at \$9,986,000, of which \$2,556,000 represents dry goods. Since January 1 the total is \$250,143,000, as compared with \$245,789,000 for the same time last year and \$225,000,000 in 1886. The exports for the week were \$5,214,657.

Twenty-five banks have now entered the new system by which deposits are made at the Sub-Treasury in the morning, against which checks can be drawn throughout the day for the payment of customs duties. The chief advantage of the system is that it relieves banks and importers of the risk and trouble of carrying the actual cash to the Custom-House. The banks which have adopted this new method include nearly all those whose customers have extensive Custom-House transactions. In view of the relations of the Sub-Treasury and Clearing-House banks, and their interdependence and mutual obligations, it is believed that no possible risk would be involved in the acceptance by the Collector of checks certified by national banks.

The Stock Exchange markets show an improved tone. On Thursday coal shares were strengthened by the impending advance in the price of coal. The report that the Iowa rate sheet would take effect at once had no influence. On Friday it was understood that the United States Court would restrain the Iowa commissioners, whereupon St. Paul and Northwestern advanced, and other grangers were stimulated. On Saturday and Monday strength was imparted by higher prices in London, although Missouri Pacific was pressed for sale on a report that Gould had put on the market about \$15,000,000 of stock. The only news of importance was that the Canadian Pacific had stopped cutting rates on dressed beef and live stock, and that the road would advance the tariff on Monday next.

On Tuesday there was a better feeling than for a long time. The Bureau reports, showing both winter and spring wheat and corn to be in improving position, were used to advance the grangers. Compared with the June report, an improvement of 2.3% is shown in winter wheat and 3.1% in spring wheat.

The following shows the bid quotations for Government bonds:

U. S. 4½, 1891, Registered.....	107¼ @
U. S. 4½, 1891, coupon.....	107¼ @
U. S. 4, 1907, registered.....	127¼ @
U. S. 4, 1907, coupon.....	127¼ @
U. S. Currency 6s.....	119 @

Bank clearances in 38 cities last week show a decrease of 1.1%, compared with the same week last year, against a decrease of 34.1% the previous week. Outside of New York there was an increase of 13.5% as compared with last year, against a decrease of 15.3% the previous week. In accounting for differences the present decreased volume of speculation must be considered.

Money on call, 1½%. Time loans on good collateral are quoted as follows: Three months, 3%; six months, 4%, and good double-name paper is readily placed at 4% @ 4½%. There is very little offering.

Sterling exchange quiet and steady. Nominal asking rates unchanged at \$4.87½ @ \$4.89½.

Imports.

The imports of Iron and Steel, Hardware, &c., at this port from June 29 to July 5, inclusive, and from January 1 to July 5, inclusive, were as follows:

	June 29 to July 5.		Jan. 1 to July 5.	
	Tons.	Tons.	Tons.	Tons.
Iron Ore: Cormack & Co.....	1,022	1,022		
Pig Iron: Naylor & Co.....	285	3,475		
G. W. Stetson & Co.....	50	10,750		
Spiegeleisen: Naylor & Co.....	406	4,785		
W. H. Arkell.....	50	50		
Steel: W. F. Wagner.....	54	813		
Montgomery & Co.....	12	60		
N. Cohn & Co.....	10	152		
F. S. Pilditch.....	8	253		
Newton & Shipman.....	5	104		
C. Hugill.....	5	155¼		
C. F. Boker.....	3	113½		
Steel Rods: Dana & Co.....	600	1,131		
Naylor & Co.....	105	11,105		
Cary & Moen.....	37	554		
Steel Sheets: Pierson & Co.....	21	502		
Steel Hoops: A. R. Whitney & Co.....	163	1,868		
Scrap Iron: M. R. Tonsiea.....	130	120		
Jas. E. Ward & Co.....	50	100		
Swedish Rough Bars: C. V. Philp.....	39	89		
Iron Blooms: C. V. Philp.....	5	5		
Cotton Ties: Collins & Co.....	550	550		
Bar Iron: C. V. Philp.....	40	40		
Iron Beams: R. F. Downing & Co.....	6	171		

Tin Plates.

	Boxes.	Boxes.
Phelps, Dodge & Co.....	18,803	258,041
Bruce & Cook.....	7,457	53,779
Dickerson, Van Dusen & Co.....	3,673	139,470
A. A. Thomsen & Co.....	3,871	58,396
Central Stamping Company.....	3,576	16,726
G. B. Morewood & Co.....	3,000	18,939
Pratt Mfg. Company.....	2,181	85,570
Merchant & Co.....	2,610	8,316
S. Shepard & Co.....	2,074	10,909
N. L. Cort & Co.....	2,021	57,384
Hy Whittemore & Co.....	1,694	39,589
Lombard, Ayres & Co.....	784	5,528
T. B. Coddington & Co.....	421	80,369
Stroud & Co.....	314	686
E. S. Wheeler & Co.....	280	969
C. S. Mersick & Co.....	101	4,242
Lalanc & G. Mfg. Co.....	62	955

Metals.

	Pounds.	Pounds.
Tin: Muler, Schall & Co.....	492,317	5,292,824
R. Crooks & Co.....	2,809	20,809
D. Thomsen & Co.....	11,306	115,363
Spelter: J. Osgood.....	92,565	92,515

Hardware, Machinery, &c.

Boker, Hermann & Co., Arms, ca., 29; Hdw., bxs., 5; Mdse., ca., 5	
Clark Mile End Company, Mach'y, pkgs., 17	
Field, Alfred & Co., Hdw., cks., 1; do., ca., 19	
Folsom, H. & D., Arms, ca., 7	
Funche, Edye & Co., Mach'y, ca., 5	
Graef Cutlery Company, Cutlery, ca., 4	
Hermann, Auckam & Co., Mach'y, ca., 20	
Hawkes, T. G., Wheels, cks., 3	
Markt & Co., Hdw., pkgs., 11	
McDermott, Walt, Forged Steel Shoes, 5	
Merchants' Dispatch Company, Arms, ca., 3	
Meriden Cutlery Company, Mdse., ca., 2	
Pim, Forwood & Co., Sugar Pans, 2	
Sanderson & Son, Mach'y, ca., 1	
Schoverling, A., Mdse., ca., 31	
Schoverling, Daly & Gales, Mdse., ca., 12	
Streace, G. L., Skillets, 100	
Taylor, Thos., Mdse., ca., 35	
Tiebout, C. H. H. & Sons, Anvils, 24	
Wiebusch & Hilger, Lim., Arms, ca., 12; Anvils, 27; Mdse., 7	
Witte, John G. & Bro., Cutlery, ca., 7	
Order: Mach'y, ca., 28; Cutlery, ca., 6; Hdw., ca., 7	

Iron and Metals Warehoused from June 29 to July 5, Inclusive.

	Tons.
Spiegeleisen: Crocker Bros.....	201

Exports of Metals.

	June 2 to July 5.	Jan. 1 to July 5.
	Pounds.	Pounds.
Copper: J. Abbott & Co.....	256,133	6,200,923
Lewisohn Bros.....		3,879,032
F. A. Jomal.....		2,581,253
American Metal Co.....		4,342,453
G. H. Nichols.....		275,939
J. Bruce Ismay.....		112,000
S. Mendel.....		560,000
Ledoux & Co.....		110,876
Muller, Schall & Co.....		470,080
Copper Queen Con. M. Co.....		394,964
J. Kennedy, Tod & Co.....		112,006
H. Meuser & Co.....		1,950
Orford C. & S. Rfg. Co.....		224,981
Robt. M. Thompson.....		120,000
Thos. J. Pope, Sons & Co.....		765,880
J. Parsons & Co.....		67,500
Bridgeport Copper Co.....		112,000
C. Herold.....		250,000
Phelps Bros.....		6,250
R. W. Jones.....		180,984
Copper Matte: Williams & Terhune.....	1,312,649	20,933,905
Lewisohn Bros.....		4,031,610
American Metal Company.....		1,372,563
J. Abbott & Co.....		295,000

C. Ledoux & Co.....	458,800
F. W. J. Hurst.....	184,288
G. H. Nichols.....	729,777
H. T. Nichols & Co.....	180,995
Old Brass: Burgass & Co.....	11,300 2,32298

British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, July 11, 1888.

The market for Block Tin has agitated, first advancing sharply, to the surprise of most speculators, and subsequently reacting nearly as rapidly. The rise was due in a good measure to the fact that a large portion of the deliveries early in the month went to consumers, who bought heavily when prices were near the lowest point, thus disappointing speculative "shorts," who had calculated upon a large amount of Tin coming on the market. This caused uneasiness, which in turn was intensified by continued reports of consumers storing stocks in the colonies instead of selling, as customary. Hence a lively demand to cover and the rapid advance in prices. The upward movement brought out considerable stock from exporters at the primary points, and that, together with realizations by local holders, resulted in the subsequent decline after the major portion of the "shorts" were covered. The market is now in a very sensitive condition, greatly facilitating manipulation.

Operations in Chili Bars have been on a very moderate scale, and prices have undergone only slight change during the week. The movement referred to last week to change the form of contracts so that other Copper than Chili Bars may be a good delivery has resulted more satisfactorily than was anticipated. It has been decided to admit a number of brands equal or superior, but the form of contract has not yet been framed by the committee chosen for that purpose. However, some 800 tons have already changed hands under the new rule, the syndicate taking it at, it is understood, £69 for three months' futures.

The Tin-Plate market has been quiet pending the quarterly meeting and prices are practically the same as current last week. The exports to the United States last month were 23,000 tons, or 2000 tons less than during June a year ago.

There is very little change in the Pig Iron trade, save that a start has been forced in the direction of reduced production in Scotland, four furnaces there having been blown out the past week. There is no outside interest in warrants at the present time, and operators within the trade are disinclined to make a decided move. In the Middlesboro' product, however, there continues to be a brisk trade. Last month's exports of Pig Iron were only 13,000 tons, against 44,000 tons in June, 1887.

Scotch Pig.—Prices have raised but slightly and business has continued slow:

No. 1 Coitness, f.o.b. Glasgow.....	47/
No. 1 Summerlee, ".....	46/6
No. 1 Gartsherrie, ".....	44/
No. 1 Langloan, ".....	44/
No. 1 Canabro, ".....	39/3
No. 1 Shotts, ".....	45/
No. 1 Glenarnock, ".....	43/
No. 1 Dalmellington, ".....	39/6
No. 1 Sglinton, ".....	38/
Steamer freights, Glasgow to New York, 5/; Liverpool to New York, 7/6.	

Cleveland Pig.—The market very firm, without, however, any increased activity. No. 1 Middlesboro', G.M.B., 34/; No. 3 do., 31/9.

Bessemer Pig.—Prices are held firmly, but business is only fair. West Coast brands, mixed numbers, 43/, f.o.b. shipping point.

Spiegeleisen.—The market continues firm, with demand good. English 20 % quoted 80/, f.o.b. N.W. England shipping point.

Steel Rails.—There has been no material change in this department. Standard sections quoted at £3. 17/, f.o.b. at N. W. England shipping point. Mid-dlesboro' district about 2/6 @ 5/ less.

Steel Blooms.—A fair business, but prices still rather weak. We quote at £3. 13/6 for 7 x 7, f.o.b. at N. W. England shipping point.

Steel Billets.—A steady market, with the demand running fair. Bessemer, 2½ x 2½ inch, £3. 16/, f.o.b. at N. W. England shipping point.

Steel Slabs.—Only moderate sales making, but prices steady. Bessemer, £3. 19/3, f.o.b. at N. W. England shipping point.

Steel Wire Rods.—Values are weaker and the demand is slow. Mild Steel No. 6 quoted at £5. 12/6 and No. 5 at £5. 10/, f.o.b. at N. W. England shipping point.

Old Rails.—Demand very slow and prices weaker. Tees quoted at £2. 12/6, and Double Heads £2. 17/6, c.i.f., New York.

Scrap Iron.—Market continues dull and prices are nominal. Heavy Wrought at £2. 7/6, f.o.b.

Crop Ends.—Very little inquiry. Former prices asked. Bessemer quoted £2. 5/ @ £2. 7/6, f.o.b.

Tin Plate.—A fair trade at about former prices. We quote, f.o.b., Liverpool:

IC Charcoal, Allaway grade	.....14/6 @ 15/
IC Bessemer steel, Coke finish	.....12/9 @ 13/
IC Siemens	.....13/3 @ 13/6
IC Coke, B. V. grade	.....12/9 @ 13/
Charcoal, Terme, Dean grade	.....12/6 @ 12/9

Manufactured Iron.—The market steady with trade fair. We quote, f.o.b., Liverpool:

Staff. Ord. Marked Bars	..... 4 17 6 @ 5 0 0
Common	..... 4 17 6 @ 5 0 0
Bl'k Sheet, singles	..... 4 12 6 @ 4 15 0
Welsh Bars (f.o.b. Wales)	..... 4 12 6 @ 4 15 0

Tin.—Market closes strong after considerable fluctuation. Straits quoted at £83 @ £83. 10/, spot, and £83. 7/6 for three months' futures.

Copper.—Dealings moderate, but prices fairly well maintained. Chili Bars closed at £81, spot, and £78. 2/6, three months' futures. Best Selected, £75, nominal.

Lead.—There has been a good business at better prices. Soft Spanish, £13 at the close.

Spelter.—Demand more active and the market strong. Silesian, ordinary, £15. 15/ @ £15. 17/6 at the close.

The Llynvi Tondy Works collieries have been purchased by Colonel North for £150,000.

Sparrow's celebrated Ffrwdd Works, at Wrexham, which have been idle for several years, are about to be restarted.

A plan has been submitted for supplying Paris with pure water from the lake of Neufchatel, at a cost of \$100,000,000. The proposed aqueduct would be 312 miles in length, including a tunnel 22 miles long under the Jura mountains. The lake is 1620 feet above the average of Parisian streets.

The Western Wages Scale.

With the exception that three or four more firms have signed the scale, the condition of the lockout in the Western iron mills presents no new features from those noticed in our issue of last week. It is claimed, however, by the officials of the Amalgamated Association that they have reliable advices to the effect that several more firms will sign during the present week and that they have no fear as to the final outcome of the struggle. The developments during the first week of the lockout would seem to bear out this opinion, as up to Monday, the 9th inst., the following named firms had signed the Amalgamated scale:

Laughlin and Junction Steel Company, Mingo Junction, Ohio.

Akron Iron Company, Akron, Ohio.

Apollo Iron and Steel Company, Pittsburgh, Pa.

Cleveland Hardware Company, Cleveland, Ohio.

Aurora Iron Company, Aurora, Ind.

Maumee Rolling Mill Company, Toledo, Ohio.

Oliver Brothers & Philips, Pittsburgh, Pa.

Lookout Iron Company, Chattanooga, Tenn.

P. H. Laufman & Co., Limited, Apollo, Pa.

Carnegie, Phipps & Co., Limited, for the Twenty-ninth Street Iron Works, Union Iron Mills, and the Homestead Steel Works.

Findlay Iron and Steel Company, Findlay, Ohio.

Findlay Rolling Mills Company, Findlay, Ohio.

Republic Iron Works, Limited, Pittsburgh, Pa.

Scottdale Iron and Steel Company, Limited, Scottdale, Pa.

Moorhead Brother & Co., Pittsburgh, Pa.

Anchor Iron and Steel Works, Newport, Ky.

Lawrence Iron and Steel Company, Iron-ton, Ohio.

Summers Brothers & Co., Struthers, Ohio.

Linden Steel Company, Limited, Pittsburgh, Pa.

New Albany Rail Mill Company, New Albany, Ind.

Kittanning Iron Company, Limited, Kittanning, Pa.

The last-named firm signed the scale on Saturday, the 7th inst., and is the last signature reported at this writing. The report published in some of the Pittsburgh papers that the nail manufacturers had signed the nailers' scale is incorrect. There are but three firms in Pittsburgh that are engaged in the manufacture of nails, these being Shoenberger & Co., Chess, Cook & Co. and Jones & Laughlins, Limited. None of these firms have signed the scale. Chairman Keating also denies the statement that a meeting of the Manufacturers' Association has been called for the purpose of discussing the present situation of affairs. No meeting has been called, nor will there be one held, unless future developments make it necessary.

Among newly authorized corporations in the State of Illinois is the following: Paige Iron Works, capital \$25,000; to purchase iron, steel, copper and other metals, and to manufacture articles from same; incorporators, John Crerar, Edward S. Shepherd and Alonzo W. Paige.

The Junction Iron Company, of Mingo Junction, Ala., have just contracted for a new blast furnace, 17 x 75 feet, with J. P. Witherow, the well-known engineer and contractor, of Pittsburgh, Pa. It is to take the place of one of their former fur-

naces, and is not an additional one in the sense of increasing the company's plant. The firm have also contracted with Mackintosh, Hemphill & Co. for an additional blowing engine for immediate erection. When all is completed, however, the company will operate but one furnace, as has been their custom in the past.

Washington News.

(From Our Regular Correspondent.)

WASHINGTON, D. C., July 10, 1888.

The tariff discussion in the House still lags along, notwithstanding occasional spasmodic efforts to facilitate its weary way through the parliamentary hopper. The optimistic reasoners have been arguing for the last month that the bill would be passed by the middle of July. The pessimistic philosophers are still claiming September or later. The most anxious part of the situation just now is as to the ability of Mr. Mills and his friends to pass the bill at the end of the debate. In order to ascertain within the range of a reasonable judgment in the premises, a canvass has been made which shows that the prospects are not certain. After all the amending and threatening and conceding and lashing the chances are doubtful, although there are those who think that the bill ought to pass, not as an economic measure, but for political considerations on both sides. The Democratic majority, as is known, is 15. To change the result on a full vote would require eight votes with the solid Republican strength. Based upon this elementary proposition comes the fact that the measure, whatever may be its fate, will not have any votes to spare on either side.

The canvass of the Democratic vote has developed the fact that the following of their numbers will not vote for the bill: Merriman, of New York City; Greenman, of Troy; Randall, of Philadelphia; Snowden, of Lehigh; Foran, of Cleveland, and Pidcock of the Fourth District of New Jersey. This makes six Democrats who will not vote for the bill. There are two who are in doubt. Vance, of Connecticut, who was "accommodated" to the extent of taking care of screws and cutlery, has always been violently opposed to the bill, but is not so vigorous in his expressions, although he believes the bill will defeat the Democrats in this State. General Tracy, of the Albany district, has also always opposed the bill until recently. Yet he has not said that he will vote for it. This would make the necessary eight to defeat.

On the Republican side the canvass shows but one who will vote for the bill. He is Fitch, of New York. The ranks, otherwise, are claimed to be firm. It is not improbable that a sufficient number will not vote so as to let the bill pass, otherwise the plans of the Republicans will not materialize. They propose to have the House pass their bill and the Republican Senate pass their substitute and then go before the country. The House failing to pass theirs there can be no substitute, as the Senate cannot originate a revenue measure. The Senate proposition will not be ready for several weeks. There have been many parties here who have been heard, but progress has been slow. From present indications the Senate substitute will be somewhat of a modification of the Randall bill. The metal features will be about the same.

The Board of Electrical Control in this city have resorted to summary measures to compel the illuminating companies to put their wires in the ground. The latter respond that the subways are not feasible for their purposes. The case will come up in the courts on the 12th inst.

Hardware.

The volume of business is limited, manufacturers and merchants being generally occupied in making their arrangements for the season's trade. Prices of Hardware in general have not been, as a rule, revised, there being less than the usual number of new discount sheets issued. In several lines of goods there have, however, been changes in price, particulars of which are given below. The market in several lines is not characterized by as much firmness as might be desired, and there has been within the last few weeks a reduction in the price of some leading goods. The general tone is not strong, and merchants and manufacturers are disposed to move conservatively. There is, however, a hopeful feeling prevailing in regard to fall business, which is regarded as likely to be of fair volume.

Cut Nails.

The week has been a very quiet one in the New York Cut-Nail trade, the market remaining unchanged at \$1.90 to \$1.95 for carload lots on dock, and \$1.95 to \$2 for small lots from store. It is stated that there is less shading from these figures by sellers of Nails not recognized as quite up to the standard than there has been for some time.

Wire Nails.

Since our last report there has been no improvement in price and some quotations are a shade lower. The price for carload lots, at factory, may be named at \$2.40 to \$2.50. Moderate lots are selling in this market at \$2.50 to \$2.60 and small lots at \$2.60 to \$2.65.

At a meeting of the Wire Nail Association, held in Pittsburgh several months ago, it was decided that in order to prevent buyers from ordering Standard Nails on a miscellaneous basis that the heading "Miscellaneous Wire-Nail List" should be adopted for all Nails except Standard Nails in kegs, and that Nails provided for in the Standard list should not be sold at a discount from this miscellaneous list. It was also resolved to make the following extras to be added to the list:

¼-pound papers..... 6 cents.
½-pound papers..... 3 cents.
1-pound papers and larger..... 2 cents.
Nails in bulk in wooden boxes..... 1 cent.

These extras to be added to the list before taking off the discount. It was also decided that Nails provided for in the price list of Standard Wire Nails in kegs should not be sold at a discount from the miscellaneous list. It was understood that these changes should go into effect when the Standard card was issued, and now that it has been issued some of the leading Western manufacturers have agreed to be governed by and to announce these provisions.

Miscellaneous Prices.

Shepard Hardware Company, Buffalo, N. Y., have issued a circular giving the following discounts for Surface Blind Hinges and Gate Hinges and Latches:

Per cent.
discount.
Blind Hinges..... 75&10&5
Gate Hinges and Latches..... 60&10&5

Their assortment of Blind Hinges includes: Shepard's, Noiseless, Niagara, Buffalo, Champion, Steamboat, Clark's (old pattern) and Clark's (tip pattern). The price list is also announced as follows:

Per dozen
sets.
Nos. 1, 10, 30, 50 and 75 (Wood)..... \$3.50
No. 3 (Brick)..... 6.25
No. 5 (Brick)..... 12.50
No. 60, "Noiseless" (Brick)..... 6.25
No. 65, "Noiseless" (Brick)..... 7.00
No. 55, "Noiseless" (extra heavy)..... 15.00

The market for Tire Bolts is somewhat irregular. The base discount of the Port

Chester Bolt and Nut Company and the American Screw Company is 70 per cent., but some of the other manufacturers are still adhering to discount 65 and 10 as the base discount.

The following quotations on Hammers are made by the Hartford Hammer Company, Hartford, Conn., for whom John H. Graham & Co., 113 Chambers street, New York, are agents. The list prices are, it will be remembered, different from those of other manufacturers:

	Dis. per cent.
Adze-Eye Nail Hammers.....	33½&5
Patent Nail-Holding Hammers.....	33½&5
Workman Adze-Eye Nail Hammers.....	33½&5
Workman Adze-Eye Bell-Face Hammers.....	33½&5
Standard Adze-Eye Hammers.....	33½&5
Machinists' Adze-Eye Ball-Pein Hammers.....	50
Machinists' Adze-Eye Straight-Pein Hammers.....	50
Riveting Adze-Eye Hammers.....	50
Farriers' Adze-Eye Hammers.....	50
Horseshoers' Adze-Eye Fitting Hammers.....	50
Horseshoers' Turning Hammers.....	50
Tinners' Riveting Hammers.....	50
Tinners' Pansing Hammers.....	50
Riveting Plain-Eye Hammers.....	50
Engineers' Single-Face Hammers.....	50
Engineers' Double-Face Hammers.....	50
Blacksmiths' Hand Hammers.....	50
Coopers' Hammers.....	50
Carriage Ironers' Hand Hammers.....	50
Chipping Hammers.....	50
Machinists' Ball-Pein Octagon Pattern Hammers.....	50
Machinists' Straight-Pein Octagon Pattern Hammers.....	50
Machinists' Cross-Pein Octagon Pattern Hammers.....	50
Brad Hammers.....	50
Tack Hammers.....	50
Boilermakers' Riveting Hammers.....	50
Drilling or Striking Hammers.....	50
Hand Drill or Stonecutters' Hammers.....	50
Masons' Hammers.....	50
Masons' Hammers with teeth.....	50
Napping Hammers.....	50
Tack Claws.....	25
Spalling or Stone Hammers.....	65&10
Blacksmiths' Hand Hammers.....	65&10
Blacksmiths' Sledges.....	65&10
Coal Sledges.....	65&10
Horseshoers' Turning Sledges.....	65&10
Stone Sledges.....	65&10
Stone Axes.....	65&10
Railroad Mauls.....	65&10
Ship or Top Mauls.....	65&10
Woodchoppers' Mauls.....	65&10
Wedges, Truckee Pattern.....	65&10
Wedges, Hartford Hammer Company's Pattern.....	65&10
Railroad Track Chisels.....	65&10
Handles.....	25

The agreement among the manufacturers of Wire goods has, with some modifications, been continued. Materially lower prices are, however, prevailing, and discount 85 per cent. is mentioned as a general quotation. At figures which are obtainable by good buyers, this line of goods is regarded as a safe purchase, as the goods are not likely to go much lower, and, with the understanding which exists among the manufacturers, may perhaps be advanced in price before very long.

Heavy Hammers and Sledges are sold at low and irregular prices. Competition is animated, and the situation is not regarded by the manufacturers with especial satisfaction.

Picks and Mattocks are also offered at low prices, some of the leading manufacturers having made recent concessions.

The Daisy Wagon Jack, manufactured by the E. Covert Mfg. Company, Farmer Village, N. Y., is sold at \$4 per dozen, subject to a discount of 35 per cent.

A meeting of the manufacturers of Table Cutlery was held in this city last week, and was attended by representatives from the leading companies. The matter of prices was considered, and it was decided inadvisable to make any change at present, existing quotations being reaffirmed. The condition of things in this line is more satisfactory than it has been for some time, prices being well maintained.

Wrought-Iron Pipe is in better condition than at our last report, in which we referred to the fact that the market showed no further yielding in price, and alluded to the probability that better figures would soon prevail. The improved condition is owing largely to extensive purchases of Pipe, so that many of the mills are well occupied with orders, and show a disposition to refuse others except at advanced quotations. The activity which has characterized the market still continues. The following prices are those at present prevailing:

	Discount, per cent.
1½ and under, plain.....	57½
1½ and under, galvanized.....	47½
1½ and over, plain.....	67½
1½ and over, galvanized.....	52½
Boiler Tubes, Iron.....	55

Since our last reference to the Cordage market Sisal Rope has been vacillating, a decline of ¼ cent having occurred, followed, however, by an almost immediate recovery of ¼ cent, so that the price remains where it was. The market continues firm, especially in view of the marked stiffness in the price of Manila Rope.

The Screw market, notwithstanding the fact that some orders have been placed at slight concessions beyond what is regarded as the extreme price, continues decidedly firm, the agreement of the leading manufacturers working satisfactorily in the regulation of the price. While these goods are thus held firmly at a large advance beyond prices which prevailed in the days of active competition between the companies, it is to be noticed that a similar condition of things prevails abroad. Recent London advices are to the effect that the makers of Iron and Wood Screws have combined to raise their price about 60 per cent. on the net value, and to divide the field, leaving the home trade exclusively to Messrs. Nettlefold, and the German home trade to the German makers, while extra-European markets are to be supplied at 72½ per cent. discount from Nettlefold's list. This is referred to as an exceptionally strong combination, which was effected with so much secrecy that speculators did not succeed in placing orders before its accomplishment, thus leaving them in a position where they cannot compete with the syndicate.

Ammunition.

Recent inquiries among the trade through the country at large develop the fact that a comparatively small proportion of the merchants pay the regular prices for Ammunition, cuts direct or indirect being exceedingly frequent. This irregularity is not confined to the houses who have openly announced cut prices, but in a quiet way extras are given by many who are compelled to adopt this course in order to meet the prices quoted by their competitors and thus hold their trade, or who make these concessions as inducements for the purchase of other goods. To such an extent does this condition of things prevail that the associated manufacturers will be obliged to take cognizance of it, or to lose such control of the market as they still retain, there being danger of an increase in this irregularity with the open announcement of cut prices by the E. C. Meacham Arms Company, Alford & Berkeley Company, McIntosh, Huntington & Co. and other houses. The association are, however, apparently reluctant to take action in the premises, as the irregularities in question are so widely practiced, and by some houses of such influence, that an attempt to enforce strict adherence to prices would be liable to precipitate a rupture which would still further embarrass them. It remains to be seen whether or they will permit this state of things to continue with only mild pro-

test, which would probably be without result, or will take active measures to enforce adherence to schedule prices, and cut off the supply of any houses by whom cut prices are made. The latter course in existing circumstances is not regarded as likely to be adopted at all generally. In the meantime the houses not connected with the association are understood to be obtaining such Cartridges as they need without any special difficulty, and it is stated by some of them that since the Meacham break they have been able to procure a supply of the goods more easily than before, notwithstanding the strenuous efforts, to which we alluded in our last issue, as made by the association to prevent this. There is some disposition among "A" houses to withdraw from the association in view of the advantages they can obtain in buying and selling the goods in the open market, but as yet there has been little movement in this direction. As bearing upon this aspect of the case, we give the following extract from a letter received from a well-known Western house:

On January 1, 1888, we concluded that our interests would be better served by not buying Ammunition of the association, and the result has more than justified our judgment in the matter. We have had no difficulty in buying all the Ammunition we needed at better advantage than we could have bought of the association, and selling it at what prices we chose to make. As you are aware, the cuts are made openly and not *sub rosa* at all, and in addition to these open quotations we have numerous confidential letters naming association prices and lower. We do not think that the association amounts to a row of pins.

While there is no doubt more vitality in the association than our correspondent regards it as possessing, it is still true that the irregularity of the market and the facility with which goods are obtained indirectly, are represented in the above letter.

Items.

Wm. G. Hibbard, president of Hibbard, Spencer, Bartlett & Co., Chicago, sailed for Europe on the 7th inst. from New York. He expects to be absent for several months.

A change has been made in the membership and name of the well-known house of Ducharme, Fletcher & Co., Detroit, Mich. They are succeeded by Fletcher, Jenks & Co., J. A. Whitney having been admitted as a partner in the firm. With this exception, the persons comprising the new firm are the same as those of Ducharme, Fletcher & Co.

At their recent annual meeting we are advised that the Louis Hoffman Hardware Company, Vicksburg, Miss., declared a handsome dividend. The old officers were re-elected. The company's increasing business is referred to with the expectation that they will do a still larger business the coming year.

A considerable departure from the usual line of goods advertised in *The Iron Age* is the card of C. Ehman, manufacturer of Wood Mantels, Elizabeth and Fulton streets, Chicago, which will be found on page 49 of this issue. Mr. Ehman is a very enterprising manufacturer of Mantels, his stock comprising over 300 separate designs, of which the photographs alone have cost \$7000. As he finds his patronage is growing among dealers in Hardware he seeks through this advertisement to extend his acquaintance and increase his trade. It is not unusual in some localities to find Hardware merchants fitting up small apartments with artistic Grates, ornamental Wood Mantels, fancy Chandeliers and other pieces of furniture from their stock to show customers how nicely—and possibly how cheaply—they can fit up parlors, libraries and sit-

ting-rooms, according to the most modern ideas in household decoration.

The Chicago papers contain a great deal of news about Saturday afternoon baseball games, in which very familiar names frequently figure. One issue recently recently reported contests between the Horton, Gilmore, McWilliams & Co.'s nine and the W. W. Kimball & Co.'s nine; the Crane Bros. Mfg. Company's nine and the Crane Elevator Company's nine; the Wells & Nellegar nine and the Mayflowers; Markey, Alling & Co.'s nine and the Wanderers. Much interest is being taken in these contests, and the half holiday is looked forward to with eagerness by not only those who play, but their associates in their respective business houses, who take a deep interest in the result. The business of the week is dispatched with more than the usual celerity, so that the decks are kept clear for Saturday.

J. B. Field & Co., Detroit, Mich., show a large line of Sporting Goods in their pamphlet devoted to summer sports. Copious illustrations are given representing leading goods in the lines indicated. Their factory is referred to as equipped with electric power and machinery for manufacturing Split Bamboo Fishing Rods, Sporting Specialties and general Gun and Fishing Tackle repairs. The catalogue will be appreciated by those who desire information on the interesting and varied line to which it refers.

Goulds & Austin, Chicago, Ill., have issued a handsome pamphlet devoted to Well Sinking Machinery, to the exhibition of which 100 pages are given. There is thus offered to those interested in this line a very complete catalogue elegantly printed on heavy paper of superior quality and containing a large number of illustrations, many of which are new. The chapter devoted to Pole Tools is especially referred to as containing the only full line of illustrations on this subject published. These Pole Tools are used for deep drilling instead of the cable outfits used in Pennsylvania and the East. But the catalogue contains a large amount of valuable and interesting matter showing the methods and machinery used in this important industry.

The advertisement of William A. Ives & Co., on page 46 will be observed. It will be seen that they announce change of address from New Haven, Conn., to Hamden, Conn., where their factory is situated. It is also stated that their New York agency has been discontinued.

In a game of baseball played at Communipaw, N. J., July 7, between the nine of the H. B. Newhall Company and the nine of Topping & Fox, the former were defeated by a score of 21 to 13.

Watkins, Pease & Co., of Chicago and Columbus, Ohio, have opened a branch house in Louisville, Ky., where they carry a full line of Builders' Material, such as Doors, Sash, Blinds, &c. They are said to represent two of the largest manufacturers in the Northwest.

The Hollow Cable Mfg. Company, Hornellsville, N. Y., are erecting a new two-story brick factory, 150 x 40, which they will fill with machinery for the manufacture of their goods. It is located adjacent to the tracks of the Erie Railway. The company report a large trade this season in their Hollow Cable Clothes Lines, of which they make four sizes, and in their Preston's Patent Braided Barbless Fence Wire. The demand for the latter is referred to as increasing very rapidly, and although the company have been running their works day and night for more than three months they are still behind their orders.

W. C. Smith, secretary and treasurer of the Rockford Bit Company, Rockford, Ill., having recently purchased R. H. Tinker's stock, has become sole proprietor. The company have lately bought the Ashtabula Bit Works, the two establishments being thus consolidated. Since then Mr. Smith has been considering the advisability of using natural gas, and in view of the advantages resulting from its use has decided to move the works from Rockford, Ill., and Ashtabula, Ohio, to Kokomo, Ind., where the company are now building factory, storerooms, office, &c. It is intimated that when the new works are completed the company will have a very convenient and well arranged factory. The use of natural gas is referred to as enabling them to produce goods of exceptional quality. With the increased facilities thus given they will continue the manufacture on a larger scale than heretofore of their Perfection Auger Bits, Special Wood Boring Tools, Machine Bits, &c.

The catalogue of the Westcott Chuck Company, Oneida, N. Y., illustrates Westcott's Patent Chucks, which include two styles of Drill Chucks, Little Giant Improved, of which seven sizes are made, and Oneida, of which two sizes are made, and also five styles of Lathe Chucks, as follows: Scroll Combination, ten sizes; Geared Combination, eight sizes; Plain Universal, eight sizes; Independent, seven sizes, and Cutting Off, seven sizes. The pamphlet is finely printed and fully illustrated.

The Palmer Mfg. Company, 290 Pearl street, New York, issue a convenient price list of Stove Boards, including the Pearl Embossed White Metal, paper and wood lined; Seamless Oxidized Crystal, paper and wood lined; Peerless Embossed White Metal, with figured brass border and corners, paper lined; Perfection Embossed Brass, figured corners, wood lined, and Star, paper lined, zinc polished. They also issue a separate price list of new Oxidized Zinc Stove Boards, paper and wood lined, and give an illustration showing the character of the decoration.

W. K. Morison & Co., Incorporated, who will, August 1, succeed Janney, Sample & Co., 107 Nicollet avenue, Minneapolis, Minn., in their retail Hardware business, would like to receive catalogues, discount sheets and quotations from manufacturers. Material improvements will be made in the interior arrangements of the store, and they hope to retain the large retail business which is already established there. The location is regarded as a good one, having been used as a Hardware store since 1866.

Condition of Trade.

We have the following advices in regard to the condition of business in Louisville, Ky:

The Hardware trade of Louisville, Ky., is in a healthy state, naturally quiet, as no one is making efforts to push sales. The farmers are busy attending to good crops, having no time for improvements, and consequently the country merchant has a dull time, which the jobbers feel. The salesmen are all called in, enjoying a needed rest. Building in towns goes on well—far beyond last year—while the trade in Harvesting Machinery was never so large. At last heavy rains have fallen, giving general relief, particularly to the tobacco crop, which was given up as a failure. Dealers, while still extremely conservative in buying, are careful to keep stocks full, with placed orders to draw from, firmly believing a good trade is coming soon again.

The following review of the Pittsburgh Hardware market is given by the *Dispatch*, of that city:

The year's business in Hardware closes up in the early part of July. Taking the country over, the trade shows a falling off according to the uniform testimony from all directions as compared with the previous season. Pittsburgh's trade in the line of this industry has been exceptional the past year. Interviews

with a number of the heavy operators in this line lead to the conclusion that the volume of business for 1887-8 has been up to the previous year, while the margin of profits has been reduced to a minimum. One heavy jobber says his trade has increased 25 per cent., but profits are below all former years. Another who has known the trade here almost from the beginning claims that the business will this year fall slightly below the average of the past two or three years, but says he is not disappointed, as tariff uncertainties and the excitement of the political campaign never fail to damage more or less the Hardware industry. All, however, agree that this city has suffered less from the general depression than any trade center on the continent. To hold our own after the prosperity of 1886-7 is glory enough, and few, if any, cities of the land have done this much, as Pittsburgh undoubtedly has in the line of Hardware. Investments in Nail mill plants have in the past two years been nearer zero as to value than at any period since Nails were made by machinery. The present situation of the Pittsburgh Hardware industry is in brief as follows: The volume of business for the year just closing has been equal to any previous year. Tariff uncertainties and the Presidential campaign have without a doubt brought the volume of trade for the year below what it might have been. But all in all the business has been up to the average of the past three years, and in some lines much better. Dealers generally are satisfied and hopeful. The depressed trade in Hardware through the country has affected Pittsburgh less than any other trade during the first half of 1888, and the outlook for the new season's business is as fair as the average at this time, which is called the winding up period for the year's trade and the time of planning for new ventures.

Arrangement of Stores.

We have received from A. L. Young, Sing Sing, N. Y., a description of two or three racks which are in use in his store, the

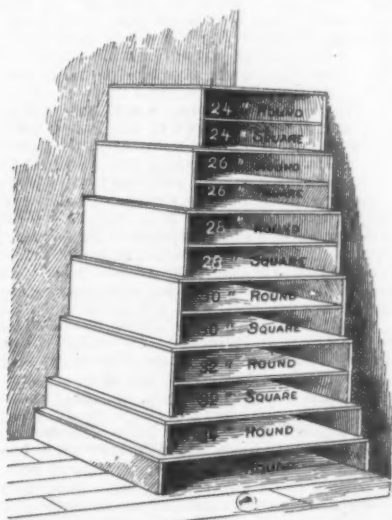


Fig. 248.—Stove-Board Rack.

first of which, a Stove Board rack, is illustrated in Fig. 248. This rack is made of $\frac{1}{4}$ -inch stuff, and is divided into compartments for holding the different sizes of Round and Square Stove Boards. These compartments are inclosed on three sides, the front being open to permit the insertion of the Boards. The Boards rest on shelves 3 inches apart, the largest being placed at the bottom, as indicated in the illustration. This rack is referred to as keeping the Boards in good shape, as they lie flat on the shelves, thus overcoming the tendency to curl up, as is the case when they stand on edge. The fact that the stock is to a great extent protected from dust is also emphasized, as well as the general utility of the arrangement.

In Fig. 249 we illustrate Mr. Young's arrangement for the accommodation of Picks, Axes, Handles, Feather Dusters, Curry Combs, &c. In this method of handling the goods large deep drawers are used in the manner indicated in the engraving. Axe boxes are utilized as drawers in the first or lower row, four

heavy iron trunk rollers being employed on each drawer to facilitate removal. Handled Axes and Picks are thus kept. The second, third and fourth rows of the arrangement above are 34 inches in length, thus leaving a ledge of 4 inches above the lower row. The drawers comprising the

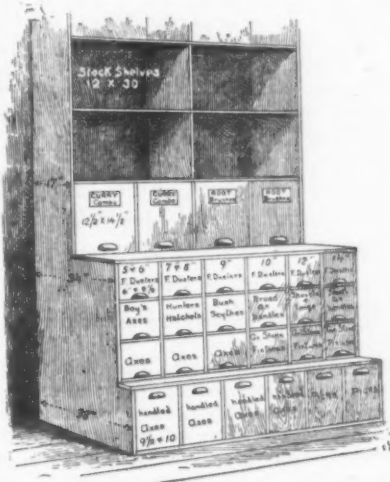


Fig. 249.—Drawers and Shelving.

first two rows are 6 x 9 $\frac{1}{2}$ inches, the others being of varying dimensions. These drawers are used for the goods indicated in the illustration, the upper row being entirely devoted to Feather Dusters. The top of this upper row corresponds with the counter level, and in the shelving there are drawers, riding on four small trunk rollers, for Curry Combs and Brushes. Wire, Finishing and Clout Nails are kept in smaller drawers, each size by itself, and large enough to hold 20 to 25 pounds each. The shelf stock is kept in conventional wooden boxes with Russell & Erwin's Sash Lifts or Pulls No. 8026—a simple open loop fastening with a screw at each end—an article which is much approved by Mr. Young for this purpose. He states that he has used over 1200 of them in refitting his store.

Fig. 250 represents his rack for Pot Covers, which is made very much on the same principle as the one described above, Fig. 248. This rack is divided by a partition down the middle, each side being 13 inches wide at the bottom and 36 inches high, and having 10 shelves each 3 inches apart. The sides of this rack are made of $\frac{1}{4}$ -inch stuff,

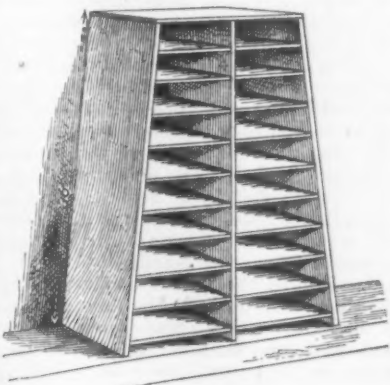


Fig. 250.—Pot-Cover Rack.

$\frac{1}{4}$ -inch material being used in the construction of its other parts. This rack accommodates the sizes of Pot Covers between 7 $\frac{1}{2}$ and 13 inches, those which measure an even number of inches being kept on one side and all others on the other side. The adaptability of this rack for the purpose for which it is intended is obvious.

R. T. Young, of Tuckahoe, N. Y., sends us a description of his method of keeping list for retailing Carriage Bolts and other goods, an illustration of which

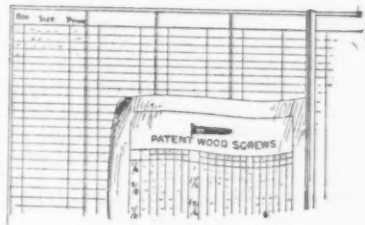


Fig. 251.—Price Card for Bolts, Screws and Hinges.

is given in Fig. 251. Two stiff pasteboards are united by a flexible leather back, the size of which is 12 x 18 inches. This is to protect from dust and dirt. The first inside page is divided into four columns for the different kinds of Bolts. This will contain prices of Bolts in sufficient variety. One of the four columns is thus arranged:

Box.	Carriage Bolts.	Price.
1	$\frac{1}{2}$ x 3.....	\$8.00
2	$\frac{1}{2}$ x 4.....	8.80
3	$\frac{1}{2}$ x 5.....	9.60
4	$\frac{1}{2}$ x 6.....	10.40

The boxes containing the Bolts are comparatively numbered and arranged consecutively, size proportioned, and divided



Fig. 252.—Brackets for Steel Goods.

to contain one or more packages of Bolts. The size of box, 12 x 9 x 6, is a good one, but Horse Nail boxes make a very good substitute. To avoid mixture it is suggested that in arranging the Bolts the kinds of each box should be as different as may be convenient. This method is referred to as making it as easy to find a

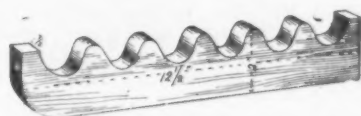


Fig. 253.—Details of Bracket for D-Handle Goods.

Bolt of any specified size as to locate an account in the ledger by the aid of an index. It is also pointed out that deficiencies of samples are readily detected. The other inside page of the price card is used for all kinds of Hinges, and between these pages is interleaved the Screw list, as shown in the illustration.

F. S. Widenor, Belvidere, N. J., sends us a description of his method of making Brackets for Shovels, Forks, Rakes, Hoes, Handled Axes, &c., which is illustrated in Fig. 252. The Brackets, which are 2 $\frac{1}{2}$ inches apart, are sawed out of $\frac{1}{4}$ -inch cherry, and are supported by 7 x 9 Rosette

Brackets, the shorter side of which is screwed to the wall. The distance between Brackets is ample to admit handles. By this method a large stock of the goods is satisfactorily accommodated. Mr. Widenor alludes to the convenience and efficiency of this arrangement, and states that the cost of these Brackets complete does not exceed \$3 per dozen pairs.

The details of Bracket for D-Handle Forks and Shovels are shown in Fig. 252. For accommodating long handle goods the Brackets are made with eight places instead of six, as shown.

Referring to another feature of his arrangement Mr. Widenor writes:

I find the use in my store of Spool Cases or Cabinets to be very advantageous. They can be bought of any dry goods house for from 50 cents to \$2 each, according to the number of drawers in them. I have in use 12 of these cases, and find that with a little alteration of the partitions they are very convenient. I use one case with two drawers, one for narrow Wrought Butts and another for Brass Butts. When I have a customer for any of these goods I pull out the drawer, and he sees at a glance the different sizes, and I am thus saved the trouble of taking down eight or ten small broken boxes and replacing them after the customer has purchased. Another cabinet of two drawers I use for Bright Auger Bits. One of four drawers is devoted to Black Auger Bits, Twist Drills, &c.; Black Auger Bits, two drawers; Morse Twist Drills, one drawer, while the other drawer is occupied by Nail Sets, Reamers, Punches, Countersinks, &c. Another cabinet of three drawers is used as follows: One drawer, Keys, all kinds, each in a separate place; one drawer, Screw Eyes in the front part and Springs and Rivets in the back. The third drawer is occupied by Copper Rivets and Burrs in the front, and Tinned Iron Rivets and Burrs in the back. A cabinet of four drawers is devoted to Bright and Black Augers, to each of which two drawers are given. Plane Bits and Gouges, each one drawer, occupy another cabinet, and Jennings' Auger Bits, Syracuse Twist Drill Bits for wood and German Gimlet Bits are accommodated in another three-drawer cabinet. I use one cabinet with two drawers for Fish Hooks in boxes, and two cabinets for Fish Hooks tied to gut. Brass Fishing Pole Ferrules occupy another. Before adopting this method of arrangement I found it very inconvenient to show the goods mentioned, but now the whole stock is readily placed before the customer. Another advantage is that in ordering any of these goods you can see at a glance just what you have in stock, and by marking numbers, &c., on the partition, you know just what to order.

Show Window Decoration.

A correspondent, writing from Boston in regard to this matter, says: "It is a good plan to advertise one's business in the papers, but for all of that the windows should be so arranged that the customer will find the store without asking half a dozen people where it is. A little study and some originality will accomplish wonders. For instance, fill the window with stove-pipe, and hang on a card with this notice:

.....
 "YOU DO NOT HAVE FITS WHEN
 YOU PUT OUR STOVE-PIPE TO-
 GETHER, AS IT'S THE PIPE THAT
 HAS THE 'FITS.'"

There would be little use in having the card and pipe in the window for a decade—a week would be long enough. If the boys in the shop have some spare time, a collection of tin cups could be made, from as small as the tinner can make to one of Jumbo size. These cups being arranged in their proper order, will be sure to attract attention. A small cook stove could be put in the window, and everything arranged as though the window was a kitchen. If the figure of a woman could be secured, and this supposed person be

made to appear to be engaged in cooking, there would surely be a crowd in front of the store for days together.

After the tin cups have ceased to be a novelty, some other article of tinware could be selected for similar display. Almost every tin shop has wash boilers from 7 to 10 inches. By making two or three smaller sizes of boilers, and putting the collection in the show window, the desired effect will be certain to be produced using this article. The large dry goods stores have men called window dressers, whose business it is to arrange the show windows, and the passer-by each day observes a new display. Not only that, but the windows are often kept lighted after the store is closed, so those who pass can see what is to be shown. Similar ideas will pay in the stove and hardware line.

The Price of Stoves.

Relating to this matter a recent issue of *The Metal Worker* says:

A correspondent in the Southwest, whom we know to be a careful and regular reader of this paper, in a letter to the Editor not intended for publication, asks some questions about the selling price of stoves that would seem appropriate for discussion in this column. We think we violate no confidence in explaining why we allude to the subject at this time, nor yet in referring directly to portions of his letter. What he asks is perhaps in the minds of other dealers, and portions of what we have said to him in the reply we have sent may therefore be of benefit in various directions. Without quoting the letter we may say that our correspondent has in mind that stove castings can be made at present for about 3 cents per pound, while stove manufacturers want from 6 to 7 cents per pound for the goods they have to sell. He argues that with a cast so low and a price so high, relatively, something must be wrong, but rather than charge the manufacturers with an unreasonable profit in a way to do them injustice he comes first to us to ask a little information.

The reason that stoves are not sold as low as our correspondent thinks would be proper, in view of the cost figures he has secured, is primarily because his cost figures are erroneous. The cost of stoves at the present time is not the same as the cost of castings, but a much higher figure. The castings are only one of several items entering into the finished stove. Before the castings are made there is the heavy item of design and patterns, and as a part of the cost of almost every modern stove is a royalty on one or more improvements in construction. The foundry cost alone, which the figure quoted represents, is estimated by some well-informed persons to be less than half of the cost of the stove when sold and ready to ship. Assuming this to be even approximately true it would make the price of stoves at the present time low, rather than much too high. This in a nut-shell is the reply to our correspondent's inquiry, although the same idea is capable of presentation in different forms and from other standpoints.

We believe the prices demanded by stove manufacturers at the present time to be low rather than unreasonably high, and that makers in general have reason to feel that they are entitled to more than they are now getting. The efforts that are being made by stove manufacturers to secure better prices through the medium of agreements, &c., are based not upon inordinate greed, but rather upon a reasonable desire to get a fair price for certain goods which competition has put at figures too low to be remunerative. These general remarks are perhaps not called for by anything in the letter above referred to, but as they express the truth as we see it we offer them

for the consideration of our readers. When conditions change and prices are fixed at a figure unreasonably high we shall have something to say on the other side.

Uniformity in Marking Goods.

The following letter from a correspondent in Brooklyn has been called out by the article which appeared under the above title in the last issue of *The Iron Age*. The writer treats the subject from a little different standpoint than the correspondent whose letter has already appeared, and presents a record of experience which will be found of interest to many in the trade. He says:

To the Editor: I notice the article entitled "Uniformity in Marking Goods," signed by "Veteran." The idea of the correspondent is, in my opinion, a good one, and is the proper way to mark regular goods, but it will not work in all cases. There are at present a great many goods sold at auction, and I frequently make purchases on such occasions. From the number of people present, and the quantity of goods sold, I am satisfied that the auction is not held especially for my benefit. From long experience in business I have learned that it is possible to charge too little as well as too much for goods. To illustrate, suppose I go to the auction and purchase a few gross, more or less, of all-bristle scrub brushes at 7 cents each. These are worth in a regular way \$3 a dozen. I put them in a basket at the door and mark them, "All-bristle scrubs, only 10 cents; worth 35 cents." At that figure there would be a fair profit; but I might just as well put out gold dollars and mark them 25 cents each. People look at them, put them down with a wise look on their face, as much as to say, "you can't fool me," and pass on. Now, my plan to sell the goods above mentioned is to mark them 25 cents. The man down the street charges 35 cents for his; you cut his prices, and that is all you want to do. I purchased some shears a short time since, with 8 inch straight cutter steel blades, for 10 cents each. It was impossible for me to sell them until I had put the price up to 40 cents; then people believed what I said concerning them, and I soon disposed of the lot. I tried them first at 15 cents and then raised the figure to 25 cents, but they would not sell. At 15 cents people seemed to doubt my word concerning the quality of the shears. I believe in selling cheap, and make it a rule to sell all regular goods at a uniform profit of 25 per cent., except it be something like stoves, that require a great deal of extra time and trouble. Upon that class of goods I get all I can, and then, occasionally, am not half paid for the trouble. I purchased some time ago about 250 odorless cooking pots, 7 and 8 inch, at 16 cents. I put a cover on them and sold them at 50 cents and 75 cents each. They were disposed of very rapidly, and I could have sold as many more if I had them. If I had put the price at a less figure, which I could easily have afforded to do, people would have thought they were too cheap to be good, that they were made of poor iron, would black the food, or something else was the matter with them, when the fact was they were first-class goods in every particular.

SHARP BUYER.

The letter of our correspondent is interesting and instructive as throwing some light upon the methods at present in vogue in the retail trade in some sections of the country. No doubt there are those who follow a different plan from that outlined, a description of which would add to the general discussion of an interesting subject, and from them we invite an expression of opinion.

Speed of Electricity.—According to Professor Gould's investigations on the speed of electricity, it appears that aerial telegraph wires on poles transmit electricity at the rate of from 14,000 to 16,000 miles per second, and that the velocity of the transmission increases with the distance between the wires and the earth—or, in other words, with the height of suspension; and that the subterranean wires, like submarine cables, transmit with reduced rapidity. Again, while wires suspended at a feeble height are known to transmit signals at a velocity of some 12,000 miles per second; those that are suspended higher give a velocity of 16,000 to 24,000 miles.

The Peerless Register.

By means of the accompanying illustrations we show a combined register border and box which is being offered to the trade by Messrs. Tallmage Bros., of 80 and 82 Seneca street, Buffalo, N. Y. Fig. 1 of the engravings represents a floor register, while Fig. 2 is an illustration of a register intended for use in the wall of a room. The floor register consists of

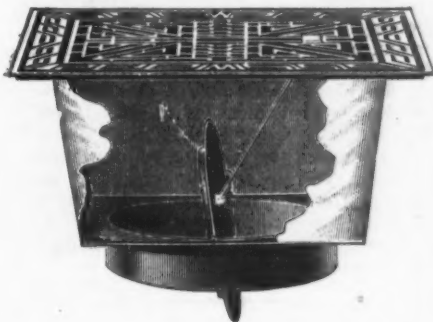


Fig. 1.—The Peerless Floor Register.

a face and border in one plate, together with a box, the sides of which are made of tin. The sides connect with a cast-iron plate, which forms the bottom of the box, on which is a collar for the purpose of connection with the hot-air pipe leading from the furnace. In place of the fans or wings ordinarily employed for shutting off the heat a damper is placed in the collar at the bottom of the box and connected by an arm with a slide in the register face. This permits the damper to be easily operated, and retains it in the position in which it may be placed. The tin box is made of IX bright tin in four pieces. The device is so made as to be readily taken apart and packed in small space for shipment without liability of breakage. The damper above referred to is located about 7 inches below the floor, and is so disposed as to reduce the liability to fire from an overheated register to a minimum. The entire register is held by two bolts, and can be readily put together. The side wall register, shown in Fig. 2 of the illustrations, is one of the same general design as the floor register just described. Its construction is such as to admit of its



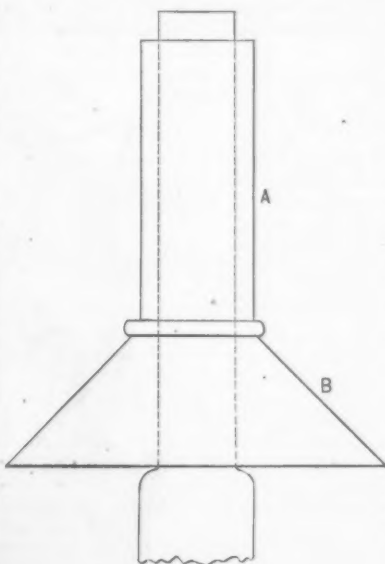
Fig. 2.—View of Side Wall Register.

being used in partitions made from 3-inch studding and upward without obstruction to the free passage of air. In this register the cast-iron plate forming the bottom of the box is turned at right angles to the face. The collar in this instance is made oval to fit the standard sizes of oval pipe. The operation of the damper in this register is the same as in the one already de-

scribed. The company state that this register can be advantageously employed on the second floor, as the oval pipe can be continued to the register, thus giving an opportunity to start from the wall pipe at the lowest point possible and connect with the register close up to the floor, thereby allowing an elevation between the air-pipe and register of the full width of the joist. The opening in the face of the register is fully one-sixth more than the capacity of the collar, thus allowing of a free circulation of air. The company make a departure in listing their registers, and indicate their various sizes by numbers, which number represents the size of the collar. These registers are made under the personal supervision of the inventor, H. K. Tallmage, and are fully covered by letters patent.

Sheet-Metal Lamp Shade.

A correspondent gives the following description of a sheet-metal lamp shade: For a number of years the writer has used a kerosene lamp and during the time has tried various kinds of shade. With every shade tried one difficulty was experienced, and that was that the heat from the chimney made the head hot, and what heat came from the chimney was apt to strike the eyes or cause double shadows. When drawing is to be done by lamp light one set of



Sheet-Metal Lamp Shade.

shadows is enough. The shade shown in the accompanying sketch can be made of light-gauge galvanized iron, and, if colored blue inside, will be so much the better. The upright part A can be made such size as the lamp chimney may require, the object being to extend the tube about to the top of the chimney of the lamp. The reflector B can be made as indicated in the drawing. Those who are accustomed to working by lamp light and have used the ordinary shades that are to be purchased at the stores have no idea how their eyes will appreciate a lamp shade that will throw the light just where it is required and no where else. While the drawing illustrates a shade adapted to a student's lamp, the shape of shade can be made to suit any kind of lamp.

An account given by the *Railroad Gazette* of the successful use of a device for scraping sand off the rails behind the locomotive, states "that 20 cars could be drawn up a given grade when the device was in use, and only 18 when the sand was al-

lowed as usual to lie on the rails. This may be taken as proving that the presence of crushed sand on the rail increases the resistance of the train, and that this sand can be removed by the use of a sweeper. Experience alone can show whether the steel brushes used will be durable."

Clewell's Patent Ice-Cream Dish and Measurer.

At various times in the past, we have received inquiries from correspondents relative to devices designed to assist the

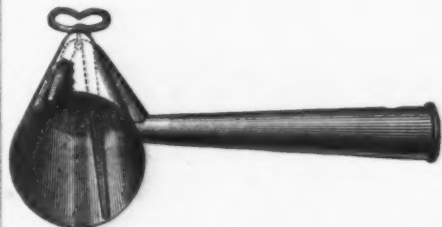


Fig. 1.—The Clewell Ice-Cream Dish.

confectioner in advantageously dispensing ice-cream. By means of the accompanying illustrations, we present for the consideration of our readers two views of articles designed to meet the requirements of the retail ice-cream trade, manufactured by Valentine Clad, of Philadelphia, Pa. Fig. 1 of the illustrations shows a perspective view of what is known as the Clewell patent ice-cream dish, the construction of which is clearly indicated in the engraving. It is made with two revolving knives which cut the cream loose, allowing it to slip out without loss of time. At the bottom of the dish will be noticed a button, the object of which is to revolve the knives. The manufacturer states that the device works equally well with soft or hard cream, with mixed or plain cream, and that it takes less time to serve the cream than with a spoon. It is made extra strong and in five standard sizes, holding regulated amounts to the quart.



Fig. 2.—The Clewell Ice-Cream Measure.

In Fig. 2 of the engravings is shown an ice-cream measure, constructed upon the same general principle as the article just described. The engraving presented herewith shows a side of the measure broken away, revealing both the button and the revolving knives. The manufacturer states that by the use of these articles, the confectioner can rapidly measure his cream and remove it from the vessel, and that they are well calculated to prevent the loss of patience, especially when the store is crowded with customers all anxious to be served. It is stated that by the use of the ice-cream measure here shown, orders can be filled in one-quarter the time occupied when the old-fashioned ice-cream measure employed.

Perfect Postal Packages.

The Postal Package Company, Baltimore, Md., are manufacturing a package for mailing liquids, oils, syrups and such similar goods, which is designated as above and represented in the illustration given herewith. It consists of a tin box lined



The Perfect Postal Package.

with a wooden tube to prevent the tin from being crushed by the weight of mail matter and to protect the glass from breakage. The wooden tubes are lined with heavy absorbent material, which, should breakage of the glass occur, will absorb the liquid and prevent damage to extraneous objects. This form is put upon the market as an improvement upon that previously made by the company, a square block with tin inside, and is called their Improved 1888 Perfect Postal Package. It is alluded to as stronger, lighter, cheaper and more compact. The packages have, it will be observed, a screw top, permitting them to be easily opened and closed. The tin case is referred to as absolutely oil and water proof. A large variety of patterns and sizes are announced, and other similar cans made by the company. In their circular they give the following extract from regulations of the Universal Postal Union, which indicate the requirements of the Post Office in regard to mailing liquids, &c.: "Samples of liquids, fatty substances and powders, whether coloring or not (except such as are dangerous, inflammable, explosive or exhale a bad odor) are admitted to the mails exchanged between the United States and those foreign countries which admit such samples to the mails they exchange with other countries of the Universal Postal Union, provided said samples conform to the following conditions—viz.: They must be placed in thick glass bottles, hermetically sealed; the bottles must be placed in a wooden box containing sufficient spongy matter to absorb the contents if bottle should break. The whole to be inclosed in an outside metal case bearing the address. The wooden box and outside case must be closed so they may be easily opened for examination of the contents. The whole package must not exceed in weight 8½ ounces, nor in size 8 x 4 x 2 inches, except those addressed to the Argentine Republic, Belgium, France or Switzerland, which may weigh not to exceed 12 ounces, and measure not to exceed 12 x 8 x 4 inches."

The Kentucky Rock Gas Company, of Louisville, Ky., J. H. Lindenberger, president, Major W. J. Davis, manager, are making arrangements to pipe gas to Louisville from their wells in Meade County, situated about 30 miles below the city, on the Ohio River. The fields in which they are boring promise an abundant supply for all requirements of Louisville. They have

no "gushers," but from the wells already sunk there is a steady flow and some have been bored long enough to prove their lasting qualities. There are several companies drilling in Meade County, all of which have been successful in finding gas and the Kentucky Rock Gas Company have completed arrangements to lay the pipe line and purchase the outflow of the other wells, which will be added to their product and carried to the city. They have now, collectively, between 13,000,000 and 14,000,000 cubic feet of gas per day, by actual measurement. This of itself is a good source of revenue, but they expect soon to produce 40,000,000 to 60,000,000 of feet per day and will lay the mains accordingly. The company contemplate being ready to furnish gas to consumers by October.

Clad's Patent Ice-Cream Machine.

This machine is manufactured by Valentine Clad, 117 and 119 South Eleventh street, Philadelphia, Pa. It is shown in the accompanying illustration. This machine is described as possessing features entirely new, and as designed to make a smoother ice-cream than can be made by other machines, and requiring less time and power, and giving a saving of ice and salt over other processes. This machine is made of iron with 44-inch fly-wheel, cedar tub, flat bottom, iron rim, open tin can fitted with adjustable scrapers of special design and with a steel blade, wood handle paddle so arranged as to give a motion the same as beating by hand. In regard to

by the scrapers forcing it to the center, it is taken up by the paddle on a constant and continuous upward movement, and on reaching the top, by the motion is compelled to descend to the sides of can, smoothing every particle in its passage, and preventing stagnation in the center and warmest part of the can, at the same time allowing an expression of air through the cream mixture, by which a lightness exceeding the most skillful paddling is accomplished, at the same time freeing the cream from all obnoxious matters by means of a complete aeration when freezing, it being a well-known fact that cream, however pure is subject to certain fermentations. As the cream thickens on the final beating the paddle is run faster by simple adjustment of the fast gear." The can being open enables the operator to see whether the freezing is progressing properly, and to test the cream at any stage of the process. Its service also in allowing the escape of vapor arising from the cream in the first stages of freezing is also referred to.

Lighting With Magnesium.—According to *Engineering*, there has recently been installed in a brewery at Marbourg a system of lighting with magnesium which is stated to give very satisfactory results. The lamps have been constructed by M. Juss, of Marbourg, and have an intensity of 450 candles, the light being covered with a globe of depolished glass. The light is white in color, very steady, and a single lamp suffices for the lighting of a



Clad's Patent Ice-Cream Machine.

the operation of the machine the manufacturer says: "The process of making cream by our machine is identically the same as making by hand, the cream frozen first and beaten up afterward, the can being rotated in the early and last stages of freezing; the motion of the paddle being suspended, this keeps the cream well cut down and does not froth or churn it. In first beating, by the adjustment of the slow motion of paddle and removing of the frozen cream from the sides of the can

room of 50 feet by 33 feet, in which work of a very delicate nature is not to be performed. A single lamp placed at the front of the building and furnished with a reflector lights up the road for a considerable distance, and completely eclipses neighboring gaslights. The light is, however, much too strong to be employed unshaded for lighting public streets. The price of the lamps is said to be about \$38, and the cost of maintenance about 25 cents per hour.

JULY 11, 1888.

No. 5, Iron handle.....	♣ gross \$6.00, dis 45 @ 50 %
Eureka.....	♣ dos \$2.50, dln 10 %
Bardine Scissors.....	♣ dos \$3.75 @ \$3.00 %

World's Best. # gross. No. 1, \$12.00; No. 2, \$24.00.
No. 3, \$30.00. \$12.00, \$24.00, \$30.00
Universal. \$12.00, \$24.00, \$30.00
Domestic. \$12.00, \$24.00, \$30.00
Champion. \$12.00, \$24.00, \$30.00

Cards.
Horse and Curry. \$10 @ 10¢
Cotton. New list, Aug., 1888, \$10
Wool. \$10

Carpet Stretchers.
Cast Steel, Polished. \$10
Cast Iron, Steel Points. \$10
Socks. \$10
Bullard's. \$10

Carpet Sweepers.
Hissell No. 5. \$10
Hissell No. 7 New Drop Pan. \$10
Hissell No. 8. \$10
Grand Rapid. \$10
Crown Jewel. No. 1, \$15; No. 2, \$10; No. 3, \$20
Magic. \$10
Jewel. \$10
Mythic. \$10
Cottage. \$10
Garland. \$10
Parlor Queen. \$10
Housewife's Delight. \$10
Queen. \$10
Queen, with band. \$10
King. \$10
Weed Improved. \$10
Hub. \$10
Cog Wheel. \$10

Cartridges—See Ammunition.
Casters.
Red. } New list:
Plate. } Brass, \$55 @ 55¢
Shadow Socket. } Others, \$60 @ 60¢
Deep Socket. \$40 @ 40¢
Yale Casters, list May, 1884. \$30 @ 30¢
Yale, Gem. \$60 @ 60¢
Martin's Patent (Phoenix). \$45 @ 45¢
Payson's Anti-Friction. \$50 @ 50¢
"Giant" Truck Casters. \$10 @ 10¢
Stationary Truck Casters. \$10 @ 10¢

Cattle Leaders.
Hudson, Beckley & Co.'s. \$10
Sargent's. \$10
Hochstetler's. \$10
Peck Stow & W. Co. \$10

Chains.
Trace, 6-10-2, exact sizes, # pair, \$1.05 } \$10 @ 10¢
Trace, 6-10-3, exact sizes, # pair, .92 } \$10 @ 10¢
Trace 7-10-2, exact sizes, # pair, 1.11 } \$10 @ 10¢
NOTE.—Traces, "Regular" sizes \$4 net # pair less than exact.

Log, Fifth, Stretcher, and other rancy Chains, list Nov. 1, 1884. \$10 @ 10¢
American Coil 3-16 6-16 7-16 8-16 9-16 10-16 11-16 12-16 13-16 14-16 15-16 16-16 17-16 18-16 19-16 20-16 21-16 22-16 23-16 24-16 25-16 26-16 27-16 28-16 29-16 30-16 31-16 32-16 33-16 34-16 35-16 36-16 37-16 38-16 39-16 40-16 41-16 42-16 43-16 44-16 45-16 46-16 47-16 48-16 49-16 50-16 51-16 52-16 53-16 54-16 55-16 56-16 57-16 58-16 59-16 60-16 61-16 62-16 63-16 64-16 65-16 66-16 67-16 68-16 69-16 70-16 71-16 72-16 73-16 74-16 75-16 76-16 77-16 78-16 79-16 80-16 81-16 82-16 83-16 84-16 85-16 86-16 87-16 88-16 89-16 90-16 91-16 92-16 93-16 94-16 95-16 96-16 97-16 98-16 99-16 100-16 101-16 102-16 103-16 104-16 105-16 106-16 107-16 108-16 109-16 110-16 111-16 112-16 113-16 114-16 115-16 116-16 117-16 118-16 119-16 120-16 121-16 122-16 123-16 124-16 125-16 126-16 127-16 128-16 129-16 130-16 131-16 132-16 133-16 134-16 135-16 136-16 137-16 138-16 139-16 140-16 141-16 142-16 143-16 144-16 145-16 146-16 147-16 148-16 149-16 150-16 151-16 152-16 153-16 154-16 155-16 156-16 157-16 158-16 159-16 160-16 161-16 162-16 163-16 164-16 165-16 166-16 167-16 168-16 169-16 170-16 171-16 172-16 173-16 174-16 175-16 176-16 177-16 178-16 179-16 180-16 181-16 182-16 183-16 184-16 185-16 186-16 187-16 188-16 189-16 190-16 191-16 192-16 193-16 194-16 195-16 196-16 197-16 198-16 199-16 200-16 201-16 202-16 203-16 204-16 205-16 206-16 207-16 208-16 209-16 210-16 211-16 212-16 213-16 214-16 215-16 216-16 217-16 218-16 219-16 220-16 221-16 222-16 223-16 224-16 225-16 226-16 227-16 228-16 229-16 230-16 231-16 232-16 233-16 234-16 235-16 236-16 237-16 238-16 239-16 240-16 241-16 242-16 243-16 244-16 245-16 246-16 247-16 248-16 249-16 250-16 251-16 252-16 253-16 254-16 255-16 256-16 257-16 258-16 259-16 260-16 261-16 262-16 263-16 264-16 265-16 266-16 267-16 268-16 269-16 270-16 271-16 272-16 273-16 274-16 275-16 276-16 277-16 278-16 279-16 280-16 281-16 282-16 283-16 284-16 285-16 286-16 287-16 288-16 289-16 290-16 291-16 292-16 293-16 294-16 295-16 296-16 297-16 298-16 299-16 300-16 301-16 302-16 303-16 304-16 305-16 306-16 307-16 308-16 309-16 310-16 311-16 312-16 313-16 314-16 315-16 316-16 317-16 318-16 319-16 320-16 321-16 322-16 323-16 324-16 325-16 326-16 327-16 328-16 329-16 330-16 331-16 332-16 333-16 334-16 335-16 336-16 337-16 338-16 339-16 340-16 341-16 342-16 343-16 344-16 345-16 346-16 347-16 348-16 349-16 350-16 351-16 352-16 353-16 354-16 355-16 356-16 357-16 358-16 359-16 360-16 361-16 362-16 363-16 364-16 365-16 366-16 367-16 368-16 369-16 370-16 371-16 372-16 373-16 374-16 375-16 376-16 377-16 378-16 379-16 380-16 381-16 382-16 383-16 384-16 385-16 386-16 387-16 388-16 389-16 390-16 391-16 392-16 393-16 394-16 395-16 396-16 397-16 398-16 399-16 400-16 401-16 402-16 403-16 404-16 405-16 406-16 407-16 408-16 409-16 410-16 411-16 412-16 413-16 414-16 415-16 416-16 417-16 418-16 419-16 420-16 421-16 422-16 423-16 424-16 425-16 426-16 427-16 428-16 429-16 430-16 431-16 432-16 433-16 434-16 435-16 436-16 437-16 438-16 439-16 440-16 441-16 442-16 443-16 444-16 445-16 446-16 447-16 448-16 449-16 450-16 451-16 452-16 453-16 454-16 455-16 456-16 457-16 458-16 459-16 460-16 461-16 462-16 463-16 464-16 465-16 466-16 467-16 468-16 469-16 470-16 471-16 472-16 473-16 474-16 475-16 476-16 477-16 478-16 479-16 480-16 481-16 482-16 483-16 484-16 485-16 486-16 487-16 488-16 489-16 490-16 491-16 492-16 493-16 494-16 495-16 496-16 497-16 498-16 499-16 500-16 501-16 502-16 503-16 504-16 505-16 506-16 507-16 508-16 509-16 510-16 511-16 512-16 513-16 514-16 515-16 516-16 517-16 518-16 519-16 520-16 521-16 522-16 523-16 524-16 525-16 526-16 527-16 528-16 529-16 530-16 531-16 532-16 533-16 534-16 535-16 536-16 537-16 538-16 539-16 540-16 541-16 542-16 543-16 544-16 545-16 546-16 547-16 548-16 549-16 550-16 551-16 552-16 553-16 554-16 555-16 556-16 557-16 558-16 559-16 560-16 561-16 562-16 563-16 564-16 565-16 566-16 567-16 568-16 569-16 570-16 571-16 572-16 573-16 574-16 575-16 576-16 577-16 578-16 579-16 580-16 581-16 582-16 583-16 584-16 585-16 586-16 587-16 588-16 589-16 590-16 591-16 592-16 593-16 594-16 595-16 596-16 597-16 598-16 599-16 600-16 601-16 602-16 603-16 604-16 605-16 606-16 607-16 608-16 609-16 610-16 611-16 612-16 613-16 614-16 615-16 616-16 617-16 618-16 619-16 620-16 621-16 622-16 623-16 624-16 625-16 626-16 627-16 628-16 629-16 630-16 631-16 632-16 633-16 634-16 635-16 636-16 637-16 638-16 639-16 640-16 641-16 642-16 643-16 644-16 645-16 646-16 647-16 648-16 649-16 650-16 651-16 652-16 653-16 654-16 655-16 656-16 657-16 658-16 659-16 660-16 661-16 662-16 663-16 664-16 665-16 666-16 667-16 668-16 669-16 670-16 671-16 672-16 673-16 674-16 675-16 676-16 677-16 678-16 679-16 680-16 681-16 682-16 683-16 684-16 685-16 686-16 687-16 688-16 689-16 690-16 691-16 692-16 693-16 694-16 695-16 696-16 697-16 698-16 699-16 700-16 701-16 702-16 703-16 704-16 705-16 706-16 707-16 708-16 709-16 710-16 711-16 712-16 713-16 714-16 715-16 716-16 717-16 718-16 719-16 720-16 721-16 722-16 723-16 724-16 725-16 726-16 727-16 728-16 729-16 730-16 731-16 732-16 733-16 734-16 735-16 736-16 737-16 738-16 739-16 740-16 741-16 742-16 743-16 744-16 745-16 746-16 747-16 748-16 749-16 750-16 751-16 752-16 753-16 754-16 755-16 756-16 757-16 758-16 759-16 760-16 761-16 762-16 763-16 764-16 765-16 766-16 767-16 768-16 769-16 770-16 771-16 772-16 773-16 774-16 775-16 776-16 777-16 778-16 779-16 780-16 781-16 782-16 783-16 784-16 785-16 786-16 787-16 788-16 789-16 790-16 791-16 792-16 793-16 794-16 795-16 796-16 797-16 798-16 799-16 800-16 801-16 802-16 803-16 804-16 805-16 806-16 807-16 808-16 809-16 810-16 811-16 812-16 813-16 814-16 815-16 816-16 817-16 818-16 819-16 820-16 821-16 822-16 823-16 824-16 825-16 826-16 827-16 828-16 829-16 830-16 831-16 832-16 833-16 834-16 835-16 836-16 837-16 838-16 839-16 840-16 841-16 842-16 843-16 844-16 845-16 846-16 847-16 848-16 849-16 850-16 851-16 852-16 853-16 854-16 855-16 856-16 857-16 858-16 859-16 860-16 861-16 862-16 863-16 864-16 865-16 866-16 867-16 868-16 869-16 870-16 871-16 872-16 873-16 874-16 875-16 876-16 877-16 878-16 879-16 880-16 881-16 882-16 883-16 884-16 885-16 886-16 887-16 888-16 889-16 890-16 891-16 892-16 893-16 894-16 895-16 896-16 897-16 898-16 899-16 900-16 901-16 902-16 903-16 904-16 905-16 906-16 907-16 908-16 909-16 910-16 911-16 912-16 913-16 914-16 915-16 916-16 917-16 918-16 919-16 920-16 921-16 922-16 923-16 924-16 925-16 926-16 927-16 928-16 929-16 930-16 931-16 932-16 933-16 934-16 935-16 936-16 937-16 938-16 939-16 940-16 941-16 942-16 943-16 944-16 945-16 946-16 947-16 948-16 949-16 950-16 951-16 952-16 953-16 954-16 955-16 956-16 957-16 958-16 959-16 960-16 961-16 962-16 963-16 964-16 965-16 966-16 967-16 968-16 969-16 970-16 971-16 972-16 973-16 974-16 975-16 976-16 977-16 978-16 979-16 980-16 981-16 982-16 983-16 984-16 985-16 986-16 987-16 988-16 989-16 990-16 991-16 992-16 993-16 994-16 995-16 996-16 997-16 998-16 999-16 1000-16 1001-16 1002-16 1003-16 1004-16 1005-16 1006-16 1007-16 1008-16 1009-16 1010-16 1011-16 1012-16 1013-16 1014-16 1015-16 1016-16 1017-16 1018-16 1019-16 1020-16 1021-16 1022-16 1023-16 1024-16 1025-16 1026-16 1027-16 1028-16 1029-16 1030-16 1031-16 1032-16 1033-16 1034-16 1035-16 1036-16 1037-16 1038-16 1039-16 1040-16 1041-16 1042-16 1043-16 1044-16 1045-16 1046-16 1047-16 1048-16 1049-16 1050-16 1051-16 1052-16 1053-16 1054-16 1055-16 1056-16 1057-16 1058-16 1059-16 1060-16 1061-16 1062-16 1063-16 1064-16 1065-16 1066-16 1067-16 1068-16 1069-16 1070-16 1071-16 1072-16 1073-16 1074-16 1075-16 1076-16 1077-16 1078-16 1079-16 1080-16 1081-16 1082-16 1083-16 1084-16 1085-16 1086-16 1087-16 1088-16 1089-16 1090-16 1091-16 1092-16 1093-16 1094-16 1095-16 1096-16 1097-16 1098-16 1099-16 1100-16 1101-16 1102-16 1103-16 1104-16 1105-16 1106-16 1107-16 1108-16 1109-16 1110-16 1111-16 1112-16 1113-16 1114-16 1115-16 1116-16 1117-16 1118-16 1119-16 1120-16 1121-16 1122-16 1123-16 1124-16 1125-16 1126-16 1127-16 1128-16 1129-16 1130-16 1131-16 1132-16 1133-16 1134-16 1135-16 1136-16 1137-16 1138-16 1139-16 1140-16 1141-16 1142-16 1143-16 1144-16 1145-16 1146-16 1147-16 1148-16 1149-16 1150-16 1151-16 1152-16 1153-16 1154-16 1155-16 1156-16 1157-16 1158-16 1159-16 1160-16 1161-16 1162-16 1163-16 1164-16 1165-16 1166-16 1167-16 1168-16 1169-16 1170-16 1171-16 1172-16 1173-16 1174-16 1175-16 1176-16 1177-16 1178-16 1179-16 1180-16 1181-16 1182-16 1183-16 1184-16 1185-16 1186-16 1187-16 1188-16 1189-16 1190-16 1191-16 1192-16 1193-16 1194-16 1195-16 1196-16 1197-16 1198-16 1199-16 1200-16 1201-16 1202-16 1203-16 1204-16 1205-16 1206-16 1207-16 1208-16 1209-16 1210-16 1211-16 1212-16 1213-16 1214-16 1215-16 1216-16 1217-16 1218-16 1219-16 1220-16 1221-16 1222-16 1223-16 1224-16 1225-16 1226-16 1227-16 1228-16 1229-16 1230-16 1231-16 1232-16 1233-16 1234-16 1235-16 1236-16 1237-16 1238-16 1239-16 1240-16 1241-16 1242-16 1243-16 1244-16 1245-16 1246-16 1247-16 1248-16 1249-16 1250-16 1251-16 1252-16 1253-16 1254-16 1255-16 1256-16 1257-16 1258-16 1259-16 1260-16 1261-16 1262-16 1263-16 1264-16 1265-16 1266-16 1267-16 1268-16 1269-16 1270-16 1271-16 1272-16 1273-16 1274-16 1275-16 1276-16 1277-16 1278-16 1279-16 1280-16 1281-16 1282-16 1283-16 1284-16 1285-16 1286-16 1287-16 1288-16 1289-16 1290-16 1291-16 1292-16 1293-16 1294-16 1295-16 1296-16 1297-16 1298-16 1299-16 1300-16 1301-16 1302-16 1303-16 1304-16 1305-16 1306-16 1307-16 1308-16 1309-16 1310-16 1311-16 1312-16 1313-16 1314-16 1315-16 1316-16 1317-16 1318-16 1319-16 1320-16 1321-16 1322-16 1323-16 1324-16 1325-16 1326-16 1327-16 1328-16 1329-16 1330-16 1331-16 1332-16 1333-16 1334-16 1335-16 1336-16 1337-16 1338-16 1339-16 1340-16 1341-16 1342-16 1343-16 1344-16 1345-16 1346-16 1347-16 1348-16 1349-16 1350-16 1351-16 1352-16 1353-16 1354-16 1355-16 1356-16 1357-16 1358-16 1359-16 1360-16 1361-16 1362-16 1363-16 1364-16 1365-16 1366-16 1367-16 1368-16 1369-16 1370-16 1371-16 1372-16 1373-16 1374-16 1375-16 1376-16 1377-16 1378-16 1379-16 1380-16 1381-16 1382-16 1383-16 1384-16 1385-16 1386-16 1387-16 1388-16 1389-16 1390-16 1391-16 1392-16 1393-16 1394-16 1395-16 1396-16 1397-16 1398-16 1399-16 1400-16 1401-16 1402-16 1403-16 1404-16 1405-16 1406-16 1407-16 1408-16 1409-16 1410-16 1411-16 1412-16 1413-16 1414-16 1415-16 1416-16 1417-16 1418-16 1419-16 1420-16 1421-16 1422-16 1423-16 1424-16 1425-16 1426-16 1427-16 1428-16 1429-16 1430-16 1431-16 1432-16 1433-16 1434-16 1435-16 1436-16 1437-16 1438-16 1439-16 1440-16 1441-16 1442-16 1443-16 1444-16 1445-16 1446-16 1447-16 1448-16 1449-16 1450-16 1451-16 1452-16 1453-16 1454-16 1455-16 1456-16 1457-16 1458-16 1459-16 1460-16 1461-16 1462-16 1463-16 1464-16 1465-16 1466-16 1467-16 1468-16 1469-16 1470-16 1471-16 1472-16 1473-16 1474-16 1475-16 1476-16 1477-16 1478-16 1479-16 1480-16 1481-16 1482-16 1483-16 1484-16 1485-16 1486-16 1487-16 1488-16 1489-16 1490-16 1491-16 1492-16 1493-16 1494-16 1495-16 1496-16 1497-16 1498-16 1499-16 1500-16 1501-16 1502-16 1503-16 1504-16 1505-16 1506-16 1507-16 1508-16 1509-16 1510-16 1511-16 1512-16 151

Lamps.
 Melting, Sargent's.....dis 55¢10 1/2
 Melting, Reading.....dis 35¢10 1/2
 Melting, Monroe's Patent.....do dos \$4.00, dis 40%
 Melting, F. S. & W.....dis 35¢10 1/2
 Melting, Warner's.....dis 30%

Lawn Mowers.
 Standard List.....dis 50¢10 1/2
 Enterprise.....dis 60¢10 1/2

Lanterns.
 Tubular, Plain with Guards.....do dos \$4.00 @ \$4.25
 Tubular, Light Wire, with Guards.....do dos \$4.00 @ \$4.75
 Tubular, Squid, Plain, with Guards.....do dos \$4.00 @ \$4.25
 Tubular, Squid, Light Wire, with Guards.....do dos \$4.25 @ \$4.50
 W without Guards, 25¢ w dozen less.
 Police, small \$6.00; Med. \$7.25; Large, \$9.75, dis 20¢25

Lemon Squeezers.
 Porcelain Lined, No. 1.....do dos \$6.00, dis 35¢30 %
 Wood, No. 2.....do dos \$3.00, dis 35%
 Wood, Common.....do dos \$1.70 @ 1.75
 Dunlap's Improved.....do dos \$3.75 @ 4.00
 No. 1, \$1.80; \$1.90 12 1/2¢ w dos, dis 35¢10 1/2
 Jennings' "Star".....do dos \$2.50
 The "Boss".....do dos \$2.50
 Dean's.....Nos. 1, do dos \$6.50; 2, \$3.55; 3, \$1.90
 Little Giant.....dis 50 @ 50¢25 %
 King.....dis 40¢25 %

Cotton and Linen Finish, Drapers'.....	dis 60
Draper's Chalk.....	dis 60
Draper's Mason's Line, 54 ft. No. 1, \$1.35.....	dis 50
.....No. 2.....	dis 50
.....No. 3, \$2.25; No. 4, \$3.75; No. 5, \$3.25.....	dis 50
Cotton Chalk.....	dis 55
Samson, Cotton, No. 4, \$3; No. 4½, \$2.50.....	dis 10
Silver Lake, Braided, No. 0, \$6.00; No. 1, \$6.50; No. 2.....	dis 50
.....No. 3, \$7.50; gross.....	dis 55
Mason's Line, No. 3, \$1.50; No. 4, \$3; No. 4½, \$2.50.....	dis 45
Wire Clothes, No. 15, \$3.60; No. 15 1/2, \$4.00; No. 35, \$5.00.....	dis 50
Ventilator Cord, Samson Braided, White or Drab.....	dis 20
Cotton.....	dis 20
.....\$7.50 per doz.....	dis 20
Locks, Padlocks, Cabinet Locks, &c.	
<i>Door Locks, Latches, &c.—</i>	
List, Dec. 30, '86, chd. Feb. 2, '87.....	dis 50
.....at 60¢ & 50¢.....	dis 50
.....Lower list prices on hand made.....	dis 50
Sargent & Co. (list Feb. 1887).....	dis 50
Reading Hardware Co. (list Feb. 2, '88).....	dis 50
Livingston & Co.....	dis 70
Perkins' Burglar Proof.....	dis 60

Plato.....	dis 334	22 3
F. Many's "Extension Cylinder".....	\$10.50	50 doz
Barnes Mfg. Co.....	dis 40	50
Yale Corrugated Key.....	dis 334	50
Diets Flat Key.....	dis 30	50
L. & C. Round Key Latches.....	dis 304	10
L. & C. Flat Key Latches.....	dis 33	4 10
Romer's Night Latches.....	dis 15	50
Yale new list.....	dis 334	50

Shenardson "or" U. S.	dis 40	25
Seed's "or" American	dis 40	25
Seed's N. W. Hay Lock	dis 40	25
Cabinet—		
Eagle, Gaylord Parker and	Jan. 1, '86, dis	33 1/2 25
Corbin.....	dis 40	25
Delta, Nos. 36 to 39.....	dis 40	25
Delta, Nos. 51 to 53.....	dis 40	25
Delta, Nos. 56 to 63.....	dis 40	25
Delta, Nos. 64 to 66.....	dis 40	25
"Champion" Night.....	dis 30	33 1/2 25
Barnes Mfg. Co.....	dis 40	25
Eagle and Corbin Trunk.....	dis 35	25
"Champion" Cabinet and Combination.....	dis 33 1/2	25
Y.....	dis 33 1/2	25
Rom.....	dis 33 1/2	25
Practicals—		

List, Dec. 23, 84.....	dis 05410230-45
Yale Lock Mfg. Co.....	dis 2854
Nagle.....	dis 2543
Burgin, Nagle Lock Co.....	dis 4042
Romer's, Nos. 0 to 91.....	dis 30
Romer's Scandinavian, &c, Nos. 100 to 508.....	dis 15
"Champion" Lock Co.....	dis 40
"Champion" Lock Co.....	dis 40
Hotchkiss.....	dis 30
"Star".....	dis 45
"Horse Shoe," 7 doz. 40.....	dis 40
Earnes Mfg. Co.....	dis 40
Woods.....	dis 40
Woods.....	dis 40
Brown's Patent.....	dis 40

Scandinavian.....	dis90
Fram's Pat. Scandinavian new list (low).....	dis	80 %
Lumber Tools.		
Ring Peavies, "Blue Line" Finish.....	* doz \$20.00
Ring Peavies, Common Finish.....	doz \$18.00
Steel Socket Peavies.....	doz \$21.00
Wall Iron Socket Peavies.....	doz \$19.00
Cant Hooks, "Blue Line" Finish.....	doz \$16.00
Cant Hooks, Common Finish.....	doz \$14.00
Cant Hooks, Wall Socket Clamp, "Blue Line".....	doz \$16.00

Cant Hooks, M. & L. Socket Clasp.....	Common	✓	dos \$18.00
Finish.....			✓ dos \$14.50
Cant Hooks, Clip Clasp, "Blue Line" Fin. ✓			dos \$14.00
Cant Hooks, Clip Clasp, Common Finish. ✓			dos \$12.00
Hand Spikes.....	✓	dos 6 ft., \$15.00; 8 ft., \$20	
Pike Poles, Pike & Hook, 12 ft. 14 ft. 16 ft. 18 ft. 30 ft.			✓ dos \$11.50 12.50 14.50 17.50 27.50
Pike Poles, Pike only, ✓			
		10.00 11.00 13.00 16.00 20.00	
Pike Poles, Broad, ✓			
dos.....	6.00 7.00 9.00 12.00 16.00		
Setting Poles, ✓ dos.....	14.00 15.00 17.00		
Warm Hooks.....			✓ dos \$18.00
Landing Blocks.....			✓ dos \$22.50
Skidding Tongs.....			✓ dos \$51.00
Log Binders.....			✓ dos \$26.00
Boat Hooks.....	✓	dos 5 ft. \$5 to 10 ft., \$10	
Honore Shovel Soot Calks.....	✓	dos 6 ft.	

Chain Raising Dogs.....	per 100 \$12.50
Ring Rafter Dogs.....	per 100, med., \$10.00; large, \$12.00
Timber Grapples.....	per dos \$30.00
Lustrs.	
Four-ounce Bottles.....	per dos. \$1.75 per gro. \$17. 00
Mallets.	
Wickory.....	dis 20¢ 10¢ 20¢ 10¢ 10¢
Cinnamivites.....	dis 20¢ 10¢ 20¢ 10¢ 10¢
B. & L. Block Co., Hickory and L. V.....	dis 30¢ 30¢ 10¢
Match Safes.	
Dangerfold's Self-Igniting.....	per dos \$1.35
Mattacks—Regular list.....	dis 60¢ 45¢ 60¢ 10¢
Meat Canisters	
Detroit-Was	1 2 3 4

Woodruff's.....	14.00	17.00	19.00	30.00	dis 45 %
Ψ dos.....			100	150	
Champlain.....	Nom.	300	dis 15.00	18.00	dis 45 %
Ψ dos.....		300	300	400	
Hales' Pattern Nos. 11	19	19	27.00	40.00	dis 45 %
Ψ dos.....	\$27.00	33.00	45.00		dis 70 %
American.....					dis 5 %
Nos.....	1	2	4		
Each.....	\$5.00	7.50	10.00	30.00	60.00
Enterprise.....					dis 30 %
Each.....	\$1.00	1.50	2.00	3.00	15.00

Pennsylvania.....	dis 40x10 1/2
Nos.....	1 2 3 00
dos.....	\$24.00 25.00 26.00 28.00
Wiles' Challenge, Nos. 1.....	dis 40x10 1/2
dos.....	\$22.00 30.00 40.00 dis 45x10 1/2
Rome No. 1.....	dis 45x10 1/2
dos.....	\$20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100
Draw Cut, Nos.....	dis 55x10 1/2
dos.....	\$50.00 75.00 80.00 225.00 dis 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100
Beef Shavers.....	dis 20x10 1/2
Enterprise Mfg. Co., dis 20x10 1/2	dis 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100
Chadborn's Smoked Beef Cutter.....	dis 30x10 1/2

Mining Knives.	
Am. 3d quality, 7 gro, 1 blade, 77; 2 blades, 112; 3 blades, 118.....	dis 20x10 1/2
Stebbins' Genuine.....	dis 40x10 1/2
Stebbins' Tinned Ends.....	dis 40x10 1/2
Chase's Hard Metal.....	dis 50x10 1/2
Smith's, 7 gro, Single, \$2.00; Double, \$3.....	dis 40x10 1/2
Knapp & Cowles.....	dis 50x10 1/2
Buffalo Adjustable.....	dis 30x10 1/2

Melanes Gates—Stebbins' Pat. dis 70x70 & 74 & 76	
Stebbins' Genuine.....	dis 40x10 1/2
Stebbins' Tinned Ends.....	dis 40x10 1/2
Chase's Hard Metal.....	dis 50x10 1/2
Smith's, 7 gro, Single, \$2.00; Double, \$3.....	dis 40x10 1/2
Knapp & Cowles.....	dis 50x10 1/2
Buffalo Adjustable.....	dis 30x10 1/2

Money Drawers.—7 gro, \$15 @ \$20.....	dis 25 30
Muzzies.—Safety, 7 gro, \$3.....	dis 25 30

Nails.—See Trade Report	
Wire Nails & Brads, list July 14, '87, dis 70x70 & 74 & 76	
Wire Nails, Standard Penny.....	dis 25 30

Nail Puller.—Curtis Hammer.....	dis 30x10 1/2
dos.....	dis 30x10 1/2
Pelican.....	dis 30x10 1/2
dos.....	dis 30x10 1/2

Nail Sets.—Square.....	dis 30x10 1/2
Round.....	dis 30x10 1/2
Cannon's Diamond Point.....	dis 30x10 1/2

Nut Crackers.	
Table (Hudson & Beckley Mfg. Co.).....	dis 40 50
Blake's Pattern.....	dis 30x10 1/2
Turner & Seymour Mfg. Co.....	dis 50 60

Nuts.	
Nuts, all kinds, 5¢ off list Jan. 1, 1888.	
In lots less than 100 lb., 1 lb. add 1¢, 1 lb. boxes add 1¢ to list.	

Oakum.	
Government.....	dis 70x70 & 74 & 76
U. S. Navy.....	dis 70x70 & 74 & 76
Navy.....	dis 70x70 & 74 & 76

Oilers.—Zinc and Tin.....	dis 65 70 75 80 85 90 95 100
Brass and Copper.....	dis 65 70 75 80 85 90 95 100
Alkaline, Hammer, Improved, No. 1, \$3.50; No. 2, \$4.00; No. 3, \$4.50.....	dis 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100
Alkaline, Hammers, Old Pattern, same list.....	dis 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100
Prior's Patent or "Paragon" Zinc.....	dis 60x10 1/2
Prior's Patent or "Paragon" Brass.....	dis 60x10 1/2
Olmead's Tin and Zinc.....	dis 60x10 1/2
Olmead's Brass and Copper.....	dis 60x10 1/2
Broughton's Zinc.....	dis 60x10 1/2
Broughton's Brass.....	dis 60x10 1/2

Packing, Steam.	
Rubber.....	dis 60x10 1/2
Standard.....	dis 60x10 1/2
Extra.....	dis 60x10 1/2
N. Y. B. & P. Co., Standard.....	dis 60x10 1/2
N. Y. B. & P. Co., Empire.....	dis 70 75 80 85 90 95 100
N. Y. B. & P. Co., Salamander.....	dis 65 70 75 80 85 90 95 100
Jenkins' Standard.....	dis 80x10 1/2

Miscellaneous.	
American Packing.....	dis 10x10 1/2
Russia Packing.....	dis 10x10 1/2
Italian Packing.....	dis 10x10 1/2
Cotton Packing.....	dis 10x10 1/2
Jute.....	dis 10x10 1/2

Pails.	
Galvanized Iron—	
Quarts.....	dis 10 12 14
Hill's Light Weight, 7 gro.....	dis 2.75 3.00 3.25
Hill's Heavy Weight, 7 gro.....	dis 3.00 3.25 3.50
Wainwright's.....	dis 2.75 3.00 3.25
Forty Shepard & Co.....	dis 2.50 2.75 3.00
Iron Clad.....	dis 2.75 3.00 3.25
Fire Buckets.....	dis 2.75 3.00 3.25
Buckets, see Wall Buckets	

Indurated Wire Ware—	
Star Pails, 12 qt.....	dis 24 30
Fire, Stable and Milk, 14 qt.....	dis 35 40
Fennell's Faber's Carpenters.....	dis 60 65 70 75 80 85 90 95 100
Faber's Round Gills.....	dis 60 65 70 75 80 85 90 95 100
Dixon's Lead.....	dis 60 65 70 75 80 85 90 95 100
Dixon's.....	dis 60 65 70 75 80 85 90 95 100
Dixon's Carpenters.....	dis 60 65 70 75 80 85 90 95 100

Rubber—	
Standard.....	dls 60±10 @ 60±10±10 %
Extra.....	dls 50±10 @ 60 %

Rat, Deunion. ♀ gross \$18.00, dis 15
Rat, "Decoy" ♀ gross \$10.00, dis 10
Ideal ♀ gross 10
Cyclone ♀ gross \$5.25
Hotchkiss Metallic Mouse, 5-hole traps.... ♀ dos 90
In full cases ♂ dos 75

Trowels

Lester's Brick and Plastering.....dis 25
Lester's Brick and Plastering.....dis 15
Dinston's Brick and Plastering.....dis 25 @ 25¢ 10
Pease's Plastering.....dis 25
Clement & Maynard's.....dis 20
Rose's Brick.....dis 15 @ 20
Packard's Brick.....dis 20
Wright's Brick and Plastering.....dis 20
Garden.....dis 70
Triers.—Butter and Cheese.....dis 25

Trucks, Warehouse, &c.

B. & L. Hook Co.'s list, 1883.....dis 40
Turns, Roller, See Pipe

Twine

No. 9, Flax Twine, ¼ and ½ Balls.....25¢ 30¢
No. 12, " " " " " ".....21¢ 29¢
No. 18, " " " " " ".....18¢ 28¢
No. 24, " " " " " ".....16¢ 24¢
No. 30, " " " " " ".....10¢ 27¢
Chalk Line, Cotton.....dis 25
Mason Line, Linen.....dis 55
2-Ply Hemp, ¼ and ½ Balls (Spring Twine).....11¢
3-Ply Hemp, 1 ¾ Balls.....12 @ 12¢
2-Ply Hemp, 1 ¾ Balls.....11 @ 11¢
Market, Twining, 5 Balls to 2.....15¢ 15¢
2, 3, 4 and 5 Ply Jute, ¼ Balls.....10¢
Wool.....dis 64¢ @ 64¢
Paper.....dis 13¢ @ 14¢
Cotton Mops—6, 9, 12 and 15 ft to do.....dis 18¢

Vises

Solid Box.....dis 50¢ 100¢ @ 60¢

Fisher & Norris Double Screw.....dis 15¢ 10¢
Stephens'.....dis 25 @ 30¢
Parker's.....dis 20 @ 25¢
Wilson's.....dis 55¢
Howard's.....dis 40¢
Milroy's.....dis 40¢ 10¢
Curtis's.....dis 40¢ 10¢
Trenton.....dis 40¢ 25¢
Merriell's.....dis 15¢ 20¢
Sargent's.....dis 50¢ 10¢ 10¢
Backus and Union.....dis 40¢
Double Screwdis 15¢ 10¢
Stimpson's.....dis 30¢ 25¢
Stimpson's Adjustable.....dis 40¢

Saw Vises

Bonney's Nos. 2 & 3.....♂ dos \$11.00, dis 40¢
Stearns'.....dis 35¢ 10¢ @ 35¢ 10¢ 10¢
Stearns's Silent Saw Vise.....dis 35¢ 10¢ 35¢
Bergman's.....dis 40¢ 10¢
Hopkins'.....♂ dos \$17.50, dis 10¢
Reading.....dis 40¢ 10¢
Wentworth.....dis 20¢ 10¢
Combination Hand Vise.....♂ gro, \$42.00
Cowell Hand Vises.....dis 20¢
Baugh's Pipe Vises.....dis 10¢

Wagon Boxes.....2nd

Wagon Jacks.....

Daisy.....♂ dos \$4.00, dis 35¢

Washer Cutters

Smith's Patent.....♂ dos \$12.00, dis 20¢ 10¢ 10¢
Johnson's.....♂ dos \$11.00, dis 35¢ 10¢
Hartley's.....♂ dos \$11.00, dis 35¢ 10¢
Appleton's.....♂ dos \$10.00, dis 20¢ 10¢
Bonney's.....dis 30¢ 10¢

Washers

size..... ¼ 5-16 ¾ ¾ ¾ ¾ 1
washers..... 5¢ 4¢ 4¢ 4¢ 4¢ 4¢ 4¢
In lots less than 200 m., ♀ b., add ¼¢, 5-16 boxes 1¢ to list

Wedges—Iron.....♂ 3¢ 4¢
Steel.....♂ 3¢ 4¢

Well Buckets, Galvanized

Hill's.....♂ dos .13 ct, \$4.25; 14 ct, \$5.25
Iron Clad.....♂ dos, 14 ct, \$4.25 @ \$4.25
Whitney's.....♂ dos \$4.25 @ \$4.25
Whitting's Wired Top.....♂ dos \$4.00 @ \$3.25
Well Wheels—3 in., \$2.25; 10 in., \$2.70; 12 in., \$3.25.

Wire

iron—
Market, Br. & Ann., Nos. 9 to 18.....dis 75¢ 70¢ 5¢
Market, Coppered, Nos. 9 to 18.....dis 70¢ 70¢ 10¢
Market, Galvanized, Nos. 9 to 18.....dis 65¢ 10¢
Market, Tin'd, Tinned List Nos. 9 to 18.....dis 67¢ 67¢ 5¢
Stone Br. & Ann'd., Nos. 18 to 18.....dis 72¢ 5¢ 75¢
Stone Br. & Ann'd., Nos. 19 to 30.....dis 75¢ 75¢ 10¢
Stone Br. & Ann'd., Nos. 27 to 38.....dis 75¢ 10¢ 80¢
Stone, Tin'd, Tin'd List, Nos. 18 to 30.....dis 70¢ 10¢ 75¢
Tinned Broom Wire, Nos. 18 to 24.....dis 72¢ 70¢ 75¢
Galvanized Fence.....dis 65¢ 65¢ 5¢
Annealed Fence, Nos. 8 & 9.....dis 72¢ 75¢ 5¢
Wire Steel Wire, Nos. 10 to 14.....dis 75¢ 75¢ 5¢
Brass and Copper, list, Jan. 18, '94.....dis 15¢ 20¢
Barb Fence.....See Trade Report
Wire on Spools.....dis 65¢
Mallin's Steel and Tinned Wire on Spools.....dis 55¢
Mallin's Brass and Copper Wire on Spools.....dis 40¢
Cast Steel Wire.....dis 60¢
Steel Music Wire, Nos. 12 to 30.....dis 55¢ 60¢
Picture Wire.....dis 60¢ 10¢
Barb Wire Safety Guards.....♂ 1000 90.00, dis 25¢
Wire Clothes Lines, See Line.
Wire Cloth, Milling, &c.
Painted Screen Cloth, No. 33, 100 sq. ft.....\$1.90
Painted Screen Cloth, No. 33, 100 sq. ft.....\$2.00
Galvanized Wire Netting.....dis 70¢ 10¢ @ 75¢

Wire Goods.—See Bright Wire Goods.

Wire Rope.—List May 1, 1888......dis 83¢
Wranches American Adjustable.....dis 25¢
Barnes' Rustless.....♂ dos \$4.00 @ \$5.00
Baxter's Diagonal.....dis 40¢ 10¢ @ 50¢
Co's Genuine.....dis 65¢ 25¢
Co's "Mechanics".....dis 55¢ 10¢ 25¢
Girard Standard.....dis 70¢ 10¢
Lamson & Sessions' Engineers'.....dis 60¢ 10¢
Largest Steel Wire.....dis 70¢ 10¢
Co's Pattern, Wrought.....dis 80¢ @ 80¢ 5¢
Girard Agricultural.....dis 80¢ @ 80¢ 5¢
Lamson & Sessions' Agricultural.....dis 80¢ @ 80¢ 5¢
Sterling Wrought.....dis 25¢
Bemis & Call's Patent Combination.....dis 25¢
Bemis & Call's Patent Combination.....dis 25¢
Bemis & Call's Bridge's Patte.....dis 25¢
Bemis & Call's Cylinder or Gas Pipe.....dis 40¢ 25¢
Bemis & Call's No. 3 Pipe.....dis 25¢ 25¢
Alken's Pocket (Bright).....♂ dos \$4.00, dis 60¢ 10¢
The Favorite Pocket (Bright).....♂ dos \$4.00, dis 40¢
Boardman's Patent.....dis 10¢ 25¢
Always Ready.....dis 25¢ 25¢
Alligator.....dis 50¢
Donohue's Engineer.....dis 25¢
Acme, Bright.....dis 40¢ 25¢
Acme, Nickel.....dis 40¢ 25¢
Walker.....dis 50¢ 25¢
Diamond.....dis 40¢
Diamond Patent Steel.....dis 40¢

Wringers, Clothes

List Jan. 18 1888, \$5.00 off

Writing Goods

Stationery.....12.77, dis 50¢ 10¢ 10¢

